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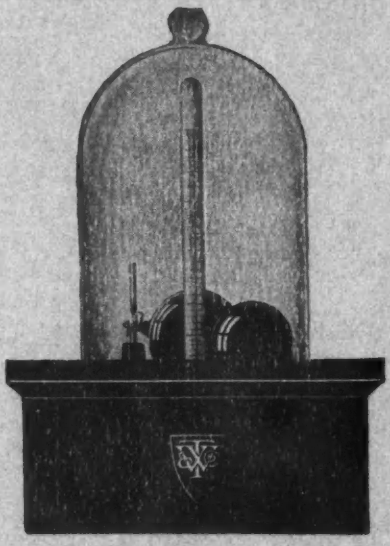

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CANADIAN PUBLIC HEALTH JOURNAL

VOL. XXV February, 1934 No. 2

# The Development of Public Health in Canada*

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TO contemplate the achievements of the past in the field of public health will serve a twofold purpose. It will call forth appreciation of the accomplishments of health officials of other days and will stimulate those of the present day to renewed efforts. A series of articles on the Departments of Health of the various provinces, therefore, will be looked forward to with anticipation by all public health workers. A record of the progress achieved in so important a phase of human activity as health will undoubtedly contain much that not only will prove of real interest, but should be of material benefit to all who are engaged in the field of public health. Many references to this subject are to be found in Canadian documents treating of the history of our country. In fact, it may be said that in no country is the history of public health so well recorded, and certainly in none is it quite so replete with striking incident as in Canada.

Not much is known of the prevalence of communicable diseases among the Indians. Jacques Cartier tells us that when he visited the Indian village of Hochelaga, which comprised a site in close proximity to the grounds upon which McGill University now stands, he saw many sick persons. Some were completely blind, some with one eye only, and others lame and obviously weak. The chief of the tribe was suffering from some form of paralysis. While it is doubtful if the eye conditions mentioned by Jacques Cartier were trachoma, this disease has existed amongst the Indians of the western provinces of Canada apparently from the earliest days. There is nothing to indicate that they suffered from tuberculosis, although it is well known that lung conditions, such as bronchitis and pneumonia, were fairly common among them. It was not long after the whites had appeared in the country that the diseases of the white man began to spread to the Indians.

Perhaps no disease caused greater ravages than smallpox. From the time of the coming of the white man until vaccination was introduced, the Indians were subject to repeated epidemics of this disease which all but exterminated them, leaving only a remnant of the tribes that inhabited the

*This is the first of a series of historical papers outlining the development of public health in Canada. The second will appear in an early issue.

eastern part of Canada. The path of smallpox, from the time of its introduction into eastern Canada until it reached the western tribes, can be followed without difficulty. It appeared in 1635 among the Montagnais, who dwelt on the lower St. Lawrence. Spreading rapidly, it invaded in turn the numerous tribes extending from the Atlantic to the Great Lakes and from James Bay to the southern seaboard. A hundred years after its introduction into Canada all of the tribes that roamed the Canadian plains had suffered from it. It was inevitable that the Indians would acquire all the communicable diseases of the white man.

During this time the French did what they could to alleviate the distress occasioned by the disease. The Hôtel Dieu, which was opened in 1639, overflowed with sick Indians. They called it the "House of Death". All diseases were admitted to the hospital indiscriminately, and communicable and non-communicable diseases were herded together. Very little, of course, was then known of preventive methods and, apart from a rigid regard for cleanliness, few if any precautions were taken to prevent the spread of infection. The wars that were being constantly waged between the English and French brought an influx of troops from France each year, and often their arrival was accompanied by outbreaks of typhus and smallpox. Frequently the colony was devastated by these diseases. The Sisters of the hospital were destined to see the Hurons, for whose care their hospital was established, literally wiped out by disease. The French settlers did not escape; epidemics of smallpox and typhus occurred at startlingly regular intervals.

The chief occupations of the people were trading, fishing, hunting, agriculture and war. New England and New France were determined to gain control of the North American continent. Spies passed back and forth. There was constant contact between the two races on the one hand and the Indians on the other. These contacts helped to carry disease from one country to the other and kept it alive.

In the year 1757, only two years before the conquest, Montcalm gave the number of smallpox sufferers in Quebec as from 2,500 to 2,600. At the time of the conquest, the French were able to call upon approximately 8,000 troops to defend the city. Had they had the same effective control of communicable disease as exists to-day, from the time they colonized the country the natural increase in the population would have permitted them to place 50,000 men in the field, and Canada would still be a French country. It is therefore clear that disease has played the master hand in guiding the destiny of the country.

Although the first settler took up land in Canada in the year 1617 only, we find that fifty years afterwards (1667), meetings of the populace were held to discuss and enact legislation to control the quality and weight of the bread supplied by the bakers of the city of Quebec.

A literal translation from the French of an enactment, (1707), to ensure proper health control of the sale of meat, reads:—

"No butcher, under pain of confiscation and fine, may kill an animal

without informing the King's Officer appointed for the purpose, or his representative, and bringing him to the place to ascertain if the animal was in a healthy enough state for public distribution of the meat. No inhabitant of the country may bring and sell meat in the town without presenting to the King's Officer or his representative a certificate from a judge, if there be one in the place of residence, or, if not, the seigneur, curé or military officer, which certificate shall state that the animals brought by them are not suffering from disease of any kind before being killed and that they did not die of accident, as for example, drowning or poisoning."

From this it would appear that the first quasi meat inspectors were judges, seigneurs, curés and military officers, and that not a physician was to be found among them.

The civil authorities were empowered to enter dwellings to see if they were maintained in a cleanly manner, and it was required that the streets be kept clean and devoid of nuisances which might prove offensive to the sight or smell.

Child welfare was given some consideration. The orphan or homeless child was made the ward of the King and money was set aside for its care—"45 livres for the first quarter for the nourishment of each child, and 10 livres a month until the child had attained the age of eighteen months." At this age they were ready for adoption. Older children were taught farming and trades.

The adoption of health measures was not haphazard; there were a few excellent physicians who were qualified to give sound advice. One of the best known was Dr. Michel Sarrazin, who practised his profession in Quebec during the time that some of these laws were enacted. He was a skilful surgeon, was said to have operated successfully on cancers; was an excellent anatomist with a flair for research, and a citizen admired and respected in both New and Old France. In the history and memoirs of the Royal Academy of Sciences of France, of which he was a member, are to be found a number of his studies of the flora and fauna of Canada.

A record of births, marriages and deaths was kept by the curés from the very earliest days, although the first law enforcing such records was passed in the province of Quebec only in 1678. These records are unbroken, and we are told that:

"In the Province of Quebec the preservation of these registrations makes it possible to have a continuous record of births, marriages and deaths from the founding of the colony on the banks of the St. Lawrence to the present. More than fifty years before Captain John Gaunt compiled mortality statistics for London, England, the priests of Quebec made reports to their superiors of the numbers of births, deaths, and marriages occurring within the year in their parishes."

One of the most interesting of death records is that of Dollard and his companions who were killed by the Iroquois at the Long Sault. It reads:

"June 3 (16....). We have received news from a Huron who escaped from the Iroquois who took him prisoner during the battle which took place eight days (ago) against the said Iroquois who numbered eight hundred, and seventeen French of this habitation and four Algonquins and about forty Hurons, at the foot of the Long Sault, that thirteen of our French had been

killed and four taken prisoner, who, we are informed by four other Hurons, escaped after being cruelly burned by the Iroquois in their country."

Legislation was passed in 1761, in Nova Scotia, for the registration of births, marriages and deaths, but it was not until the year 1864 that official returns of births and deaths were made compulsory in that province.

In Ontario, the year 1860 saw the passage of an Act to register marriages, and in 1868 to record births and deaths. Four years later British Columbia passed similar legislation. The prairie provinces established a system of vital statistics at the time of their inception. All the provinces now forward their statistics to the Dominion Bureau of Statistics, where they are compiled and published.

Reverting to the French régime we learn that the intendent Bigot introduced quarantine regulations on October 20, 1721, to prevent the importation of plague by vessels coming to Quebec from Marseilles, where this disease existed in epidemic form. Thirty thousand people had died of the disease in that city during the preceding year. It was enacted that:

"Captains or masters of vessels, bark or brigantine, from all Mediterranean ports or which touched there should anchor in the stream off Isle aux Coudres. There, those who have cannon or swivel-guns shall fire three shots a quarter of an hour apart.

"Those who have no cannon or swivel guns shall fire three musket shots, also at an interval of a quarter of an hour apart."

Although this was the first official quarantine enactment in Canada, it was customary for physicians to board incoming steamers at Quebec to examine passengers and crews before they landed, if the vessel reported disease on board. In this regard, Juchereau, in her "History of the Hôtel-Dieu of Quebec", says:

"In the year 1710 a vessel named the Belle Brune arrived here [Quebec], coming from the Islands [West Indies]. We suspected it of being infected with plague because four or five men were dead in less than twenty-four hours. We sent them surgeons to visit the sick and who, being satisfied that there was no danger to the community, they were permitted to disembark and we received from the ship many sick in our hospital, all of whom suffered with a burning fever during many weeks from an unknown sickness, but very dangerous by the ravages which it caused in the colony. The disease was yellow fever."

The first record of typhus on board a ship arriving in Quebec was in the year 1659. Among the passengers was Jeanne Mance, the foundress of the Hôtel-Dieu at Montreal. The disease was communicated to the inhabitants.

It is strange that we find no reference to the measures that were taken to prevent the spread of smallpox, typhus and other diseases that so frequently decimated both the French and Indian population; nor is there anything in the various histories to indicate that isolation and segregation of those ill, and observation of contacts, was resorted to. Those suffering from infectious diseases were admitted to the wards of general hospitals, with the result that infection was communicated to patients and nurses and spread thence to the community, frequently with disastrous results.

Quebec acted as a buffer for the provinces west of her during the period from 1832 to 1854 when epidemic diseases such as cholera and typhus were being brought into the country by immigrants. Ontario received a fair share of the overflow. Cholera was brought to various towns along the St. Lawrence and the Great Lakes in 1832. The towns which suffered most were Quebec, Montreal, Cornwall, Prescott, Kingston, Toronto, London, St. Thomas, Goderich, Coldwater, Hallowell, and Cobourg. Nova Scotia escaped in 1832, but in the year 1834 the disease spread through the province and extended east as far as St. John's, Newfoundland. In 1849 the disease entered Canada by way of Kingston, cases appearing in Toronto and other cities. In 1854 Dr. James Bovell of Toronto injected milk into the veins of six of his patients, two of whom recovered. Typhus was present in all of the provinces in 1847. There were many cases in the province of Ontario. From Grosse Isle, Port Sarnia and all along the borders of the St. Lawrence river, on the shores of Lake Ontario and Lake Erie—wherever the tide of immigration extended—were to be found the graves of victims of this disease. Twenty thousand immigrants died of the disease in that year alone. Strangely enough, while we look upon the cholera and typhus years with some degree of horror, the thirty thousand deaths from influenza in 1918 leave us unmoved. Speaking of influenza in 1826 the Quebec Gazette says, "On the whole, we do not recollect that there has ever prevailed in this city an epidemic so general and so severe as that which now interrupts every family circle, and casts a gloom over every countenance." In Quebec city alone there were thirty thousand cases, and practically every other city in Canada was visited by the disease in that year.

Before Departments of Health were established the only concern of the people was the control of epidemics; there was no effort toward prevention. Control was effected through Committees, or Boards of Health.

When cholera appeared in 1832, Boards of Health were hurriedly formed throughout the country to institute public health measures to prevent the entry and spread of the disease within the country. These consisted chiefly of the establishment of a Quarantine Station at Grosse Isle on the St. Lawrence river, and the hurried construction and adaptation of buildings at Quebec and Montreal to house the sick who could not be accommodated in hospitals. As soon as the epidemic subsided the Board was disbanded. Reappearance of the disease in the years 1832, 1834, 1851, 1852, and 1854, saw the establishment of similar Boards. In the typhus year, 1847, seventy-five Boards of Health were organised throughout the country, and in 1849 a central Board of Health was established which was resurrected to deal with succeeding epidemics.

There was no continuity of effort and nothing of a permanent nature in the way of sanitary measures. The average death rate was thirty-seven per thousand of the population, and during times of epidemic it ran as high as fifty or more per thousnd, such as in the year 1885 when smallpox was epidemic in Montreal.

The province of Quebec adopted a Public Health Act in 1886 as a result of the epidemic of smallpox which occurred in the preceding year.

In looking over the mortality rates of the province of Quebec at this time we find that every twelfth death was from tuberculosis. Scarlet fever was epidemic in 1889 and 1893, and in the year 1895 there were 2,243 deaths from diphtheria, 687 from scarlet fever, 410 from typhoid, and 159 from measles. The case fatality rate from diphtheria was 50 per cent, scarlet fever 12 per cent, typhoid 20 per cent, and measles 10 per cent. Cases of these four contagious diseases had occurred in the province of Quebec during the year 1895 to the number of 12,366. The incidence of disease in other provinces was comparable with that in the province of Quebec. One has but to compare these conditions with the present day to realize how well the Provincial Departments of Health have justified their existence.

At the time of Confederation little was known of the subject of public health. The words "public health" had not yet been coined. It is not, therefore, to be wondered at that the British North America Act of 1867 contains no reference to the subject. The Public Health Act which was passed in 1875 in Great Britain brought forcibly to the attention of Canadian authorities the advisability of creating similar legislation, and was an important factor in determining the passage of a public health enactment in the province of Ontario in 1882. This Act, which established a provincial Board of Health in Ontario, was the most important piece of public health legislation that had up to that time been passed in Canada. The other provinces were quick to realize the advantage of a permanently organised health board, and to-day every province in Canada has its own Department of Health.

From the time of Confederation it became increasingly apparent that the subject of public health had been neglected by the Dominion. Health activities of the Dominion Government were divided among the Departments of Agriculture, Marine, Fisheries, and Inland Revenue. The control of tuberculosis was the responsibility of the Department of Finance and the Conservation Commission. The National Council of Health under the wing of the Conservation Commission advised the Federal and Provincial Governments on public health. The whole thing lacked co-ordination. The Canadian Medical Association passed numerous resolutions from the time of its inception and memorialised the Federal Government for the creation of a Dominion Department of Health. At each session Dr. Brouse, M.P., introduced a motion in the House of Commons for a select committee on the subject of vital statistics and public health, and from year to year petitions were presented to the Government by public organisations, but the movement grew slowly, and it was not until the year 1919 that a Department of Health was established. In the Act creating that Department, provision was made for a Dominion Council of Health composed of the Chief Medical Officer of each of the provinces, and five lay members representing, respectively, labour, agriculture, rural and urban women's organisations, and one scientific adviser. The chief object of the Council is to bring the provincial health officers together at intervals to discuss their problems and obtain uniformity of procedure throughout the country.

In the year 1875, in the city of Montreal, an effort was made to stimulate

public health by the creation of a citizen's public health association. At this time the annual death rate in Montreal was 34 per thousand. It was said to be one of the most unhealthy cities of the continent. This may be looked upon as the precursor of voluntary organisations which have accomplished so much and have so staunchly supported the officials of Public Health Departments. Notable among these are the Canadian Tuberculosis Association, the Victorian Order of Nurses, the Canadian Red Cross, the Canadian Public Health Association, the Canadian National Committee for Mental Hygiene, the Canadian Social Hygiene Council, the Canadian Council on Child and Family Welfare, and the St. John's Ambulance Association.

The history of the public health movement in Canada is not without its record of self-sacrifice. From the time of the priests who went among the Indians caring for their physical and spiritual needs during epidemics of smallpox, until the time of the last great epidemic in Montreal in 1885, there was no shortage of physicians who were willing if necessary to sacrifice and who did sacrifice their lives in the control of epidemics and care of the sick. During the typhus epidemic of 1847, Benson of Dublin, Pinet of Varennes, Malihot of Verchere, and Jameson of Montreal, died at Grosse Isle of typhus in the faithful performance of their duties. Collins died at Partridge Island of typhus and Slayter of Halifax, who volunteered in 1866 to go into quarantine with patients suffering from cholera who arrived at Halifax that year, also forfeited his life.

To Mr. W. J. Gage (afterward Sir William Gage), is due the inception of the sanatorium movement in Canada. In 1893 he proposed to build a home for consumptives in connection with the Toronto Home for Incurables, but Dr. J. E. Graham, late Professor of Medicine of the University of Toronto, prevailed upon him to build a sanatorium in the Muskoka Lakes region, on Trudeau lines. Perhaps no single achievement in public health excels that of the sanatorium movement. It is impossible to estimate the amount of good that has been accomplished in the number of lives saved or prolonged.

In her "History of Medicine in the Province of Quebec", Dr. Maude E. Abbott says:

"Probably the greatest contribution which the 20th century has made to the welfare of the race has been through the growth of community measures on a large scale for the preservation and prevention of disease by means of large volunteer organisations of representative citizens, under whose aegis investigations into sanitary and social conditions are carried out, legislation is influenced and reforms recommended, welfare agencies administered and that form of instruction known as 'health education' spread among all sections of the population. This is the ideal of the public health movement of the present day."

# Venereal Disease Control in Canada

GORDON BATES, M.B.

*General Director, Canadian Social Hygiene Council, Toronto*

THE movement for the control of the venereal diseases in Canada owed its commencement very largely to the war. Previous to the war there were probably two venereal disease clinics in the whole of Canada. There was no legislation whatever. At the present time there are over a hundred clinics and specific legislation in all the nine provinces, as well as carefully worked out treatment schemes.

The venereal diseases were not discovered for the first time during the Great War. There have been venereal diseases during all wars, and wars have been a means for their dissemination and the multiplication of their sinister results. By 1914 scientific knowledge had progressed to a point where venereal diseases were recognized to be more prevalent, more serious, and more communicable than anyone had realized, and already steps were under way in the civilian population to get them under control. In various countries, including Canada, small interested groups had already tried to attract attention to a problem which required action if the serious, though hitherto unrealized, results of syphilis and gonorrhoea were to be prevented.

Three events, all occurring during the decade previous to the commencement of the Great War, had most to do with the development of an opinion which tended to make both military and civil authorities pay more attention to the subject than they ever had before. These were the discovery of the spirochaete by Schaudinn, the development of the Wassermann reaction, and the elaboration of salvarsan or "606" by Ehrlich.

The fact that the men participating in the Great War were largely recruited from civil life meant that cases neglected in civil life were unearthed by medical officers—and brought for the first time, as it were, under official scrutiny. Manpower was really a matter of extreme importance, and the fact that veritable armies of men were kept out of the trenches by these ailments was a matter of concern. That the men suffering from these afflictions were fresh from civil life and in any case infected from civilian sources brought to light a problem which had been long neglected by health authorities in general. This was true in Canada as well as elsewhere. A combination of factors, of which the war was perhaps the most important, resulted in focussing public attention on what seemed to be a new problem, with the result that towards the end of the war specific plans were laid for dealing with the question in Canada on a Dominion-wide scale.

### *Legislation*

The first steps were in the direction of securing legislation. Although an Order-in-Council of a somewhat loose character dealing with the venereal diseases had been passed in Saskatchewan in 1917, the first definite comprehensive legislation dealing with the subject was passed in Ontario in May, 1918. This came about as the result of the organization of public opinion by a small

group in the City of Toronto who had formed themselves into what was virtually an anti-venereal diseases society. This legislation, modelled largely after the Western Australian legislation but with some significant changes, immediately followed the Report of a Royal Commission in Ontario, which spent some time investigating the whole question.

The Ontario legislation was ultimately copied by all the other provinces (except Quebec, which developed legislation of a type peculiar to that province). This legislation, which remains on the statute books of all the provinces in question virtually without change, officially recognizes venereal disease as a communicable disease, requires its reporting by physicians to medical officers of health, gives new powers to medical officers of health, and makes possible the creation of entirely new machinery which has assisted materially in the development of a co-ordinated programme in the Dominion.

Some of the provisions of the original Ontario legislation are as follows:

(1) Whenever any person is under arrest or in custody charged with an offence against the Criminal Code of Canada or against any statute of Ontario or any by-law, regulation, or order made under the authority thereof, or has been committed to a gaol, reformatory, or other place of detention, the medical officer of health, if he believes that such person is or may be infected with, or has been exposed to infection from venereal diseases, may cause such person to be examined for the detection of these diseases.

(2) If he or she is found to be infected, the medical officer of health may put such person under treatment.

(3) Gaol physicians are required to report cases suspected of having venereal diseases to medical officers of health.

(4) Where a medical officer of health is credibly informed that a person resident in the municipality or district for which the medical officer is appointed is infected with venereal disease, and upon examination is found to be infected or is liable to infect other persons, the medical officer of health is empowered to put in motion certain machinery which will result in ascertaining whether this person is infected, the medical officer of health is empowered to issue directions as to the treatment of such person and may require him from time to time to produce evidence that he is undergoing proper medical treatment.

(5) Hospitals receiving aid from the Government are required to make effective provision for the examination and treatment of persons suffering from venereal diseases.

(6) Persons other than legally qualified practitioners are prohibited from treating or supplying drugs for the treatment of venereal diseases.

(7) The advertising of all venereal disease remedies is forbidden.

(8) Treasurers of municipalities are required to pay accounts for services performed under the direction of boards of health in connection with the treatment of venereal diseases.

(9) Various provisions are included in the Act for the preservation of secrecy.

(10) The reporting of venereal diseases is provided for, and in order to ensure secrecy, reports by medical practitioners to medical officers of health are by number. Only when the patient wilfully neglects treatment is provision made for reporting by name. In such a case the medical officer of health is empowered to enforce treatment.

### *Dominion Government Participation*

With the passing of legislation there came a realization of the fact that legislation alone will not control disease. In addition there must be a widespread dissemination of knowledge and something must be done to care for the great number of infected persons unable to pay for treatment. Further, in a large country like Canada, with segregated provinces, it is necessary that steps be taken to co-ordinate activity in order that all the provinces may present a united front towards a common enemy.

A conference of health officers, physicians, and interested citizens from

all over Canada was therefore called in 1919 in order to plan and co-ordinate all necessary activities.

As the result of this conference a Venereal Disease Department was established as part of the newly formed Dominion Department of Health. Grants amounting to $200,000.00 yearly were made to the provinces, this sum to be distributed on a *pro rata* basis on condition that the provinces contribute an amount in addition equal to the grant from the Dominion. The result of the grant from the Dominion was that immediately most of the provinces came into the scheme, ultimately all of them. Clinics began to spring up in all parts of Canada until at the time of writing there are 102 in operation.

*Value of Legislation*

The institution of legislation of this type has had its value in dealing with venereal disease control in Canada. The legislation has, of course, had its weak points. Reporting by private physicians has not been effective. As applied to "free clinic" patients especially, the plan which provides for initial reporting by number and later by name where treatment has not been kept up is a provision which, when utilized, is most effective. The scheme is applicable to private and clinic patients alike. The very fact that it is common knowledge that venereal diseases are reportable and that treatment is compulsory has had an educational effect which results in a better appreciation on the part of the general public of the seriousness of the disease. As a matter of fact, comparatively few cases are reported by name, and in most cases it is unnecessary to enforce treatment.

There have been criticisms of the legislation. Fears were expressed at first that it would lead to concealment. These fears have not been borne out. It was also suggested that legislation of the Ontario type would result in discrimination against women. In drawing up the legislation this probability was anticipated, and the result has been that from time to time since the Venereal Disease Act came into operation statistics have been submitted which prove that not only has there been no apparent discrimination but that actually there are frequently times when more men are dealt with under the Act than women.

One result of the legislation has been that it has proved to be a stimulus to superintendents of institutions of various types to institute routine examination of inmates and this has resulted in a much more clear-cut conception of the percentage of venereal diseases in hospitals, asylums, and places of detention, and by inference in the civil population.

*Survey Studies*

The institution of the routine Wassermann reaction regularly performed has also definitely proven a diminution in the amount of late syphilis. For example, in 1916 routine Wassermanns on all patients in Toronto General Hospital showed that 12.8 per cent had syphilis. In 1932 a similar procedure resulted in a positive percentage of 2.5.

In the Hospital for Sick Children in Toronto, over a somewhat similar period of time, the percentage was reduced from 5 to less than 1, an indication,

incidentally, of a very definite reduction in the amount of congenital syphilis.

Similarly surveys have been made possible with reference to general paralysis of the insane. Ten years after the end of the war a definite reduction in general paralysis of the insane was shown in Canadian hospitals for the insane. In this respect the following table is of interest:

REDUCTION OF GENERAL PARALYSIS OF THE INSANE IN HOSPITALS

| Province | General Paralysis of the Insane in Hospitals for Insane per 100 patients | | Reduction | General Paralysis of the Insane in Hospitals for Insane per 100 patients | Reduction |
|---|---|---|---|---|---|
| | 1920 | 1923 | | 1928 | |
| Ontario | 1.5 | 0.87 | 0.63 | 0.71 | 0.16 |
| Saskatchewan | 2.7 | 3.4 | Increase 0.7 | 1.8 | 1.6 |
| Manitoba | 1.0 | 0.65 | 0.35 | 0.23 | 0.42 |
| Alberta | 3.5 | 3.0 | 0.5 | 3.6 | Increase 0.6 |
| Nova Scotia | 0.23 | 0.62 | Increase 0.39 | 0.72 | Increase 0.10 |
| British Columbia | 1.4 | 1.2 | 0.2 | 1.1 | 0.1 |

Three surveys have been carried on with the idea of ascertaining whether there has been a reduction in venereal diseases in the civil population. These surveys carried on in Toronto and Winnipeg—similar methods being used to those used in surveys conducted in various cities in the United States—proved that there was a smaller incidence in these two Canadian cities than in any of the fourteen American cities surveyed, some large cities in the United States being included.

*Regional Conferences*

In 1931, the Dominion Department of Health, in co-operation with the Canadian Social Hygiene Council, arranged a series of conferences held in Western Canada (Edmonton), Eastern Canada (Montreal), and Central Canada (Toronto).

These conferences had to do with the general question of the management of venereal diseases, and there was a full discussion of all of the clinical aspects of the problem as well as many other subjects having to do with practical questions connected with the general problem of venereal diseases control. Such subjects were discussed as: instruction and education of patients; early treatment centres; effective educational treatment; follow-up methods; management of clinics; practical means of making use of legislation already on provincial statutes; treatment of indigent patients living in outlying districts.

It was the general feeling of these conferences that aside from a reduction in serious late syphilis it was difficult to prove any fall in the incidence of venereal diseases, and that all our efforts in the direction of both treatment and education should be redoubled.

Out of these conferences came resolutions having to do with the development of social medicine. It was found, for example, that the development of clinics throughout Canada had resulted in a great volume of venereal disease

work being carried on in venereal disease clinics largely by physicians with special knowledge who have given their time gratuitously.

One resolution urged that remuneration be provided for physicians serving in venereal disease clinics. In view of the fact that one province alone reports that 100 physicians have been giving their time gratuitously in clinics for ten years this resolution is not without its significance.

It is also urged that medical associations include venereal diseases in their programmes for meetings, that forms be provided for patients who find it necessary to travel from place to place for the guidance of clinicians in the various clinics they may visit.

Another resolution of distinct significance had to do with the great importance of the educational value of the first interview between a clinician and his patient. Every emphasis, of course, was placed on the importance of intensive and continuous treatment.

These resolutions were submitted to the Dominion Council of Health, a bi-yearly conference, which includes deputy ministers and chief officers of health from all of the provinces, and some action has resulted.

It is only regrettable that the depression, with the consequent necessity for conserving funds—Dominion and provincial—has prevented these resolutions having their full effect.

### ORGANIZATION OF CANADIAN SOCIAL HYGIENE COUNCIL

Various types of machinery of importance developed. The value of the trained nurse social worker was early recognized, and her duty of helping in the social investigation of cases, location of sources, and the keeping of patients under continuous treatment. One should not fail to mention here that in Canada little or no reliance has been placed on the mere existence of legislation for the control of venereal diseases, necessary though it has seemed. The continuous education of patients by physicians and social workers alike has been of more importance than anything else, as I have already suggested. Only where education has failed has the utilization of powers for enforcing treatment been necessary.

The need for widespread education of the public was recognized from the first, and one of the decisions of the original Dominion-wide Conference was that a new voluntary association should be formed with the specific duty of undertaking this task. This association, at first called the Canadian National Council for Combating Venereal Disease—now the Canadian Social Hygiene Council—has been carrying on continuous educational propaganda since 1920.

The Council has had on its executive chief officers of health from the various provinces, as well as interested physicians and laymen. An advisory board, composed of some of the most influential persons in the commercial and financial world as well as editors of newspapers and political leaders, has been of obvious value, while affiliations with most of the great voluntary associations has established connections with manufacturers, organized labour, organized women, the medical profession, and other national groups.

The Canadian Social Hygiene Council has of recent years given a very

broad interpretation to the term *social hygiene*. The reason for this has been that after the initial propaganda resulting in the establishment of legislation and the development of a specific venereal disease control scheme there seemed to be less need for the intensive education which seemed to be essential at first. In addition there were other serious health problems which had been neglected just as much as had been the venereal disease problem, and venereal disease propaganda by itself contributed little towards their solution. Rural health had been badly neglected for example, and the solution of this problem would contribute something towards the solution of the original problem.

The discovery that a very large percentage of the syphilitics, discovered by means of the routine Wassermann in hospitals, were unaware of their infection (in perhaps 50 per cent of cases this was true) emphasized the need of periodic health examination as a general procedure applicable at all ages to the discovery of any type of incipient disease.

It was felt, in fact, that a general health programme on a Dominion-wide scale was essential if one were to hold together even the venereal disease control machinery we had. The Dominion Department of Health, with the venereal disease control scheme as its major activity, was, for example, in a vulnerable position, as it is questionable whether it is justified to retain a separate department under a ministry where expenditures are infinitely smaller than the expenditures of other departments and activities of such a restricted character that they do not seem to be of great public significance. It seemed that in all health fields Dominion leadership and the expenditure of Dominion money were essential, and it is readily seen that were these important ends not achieved the venereal disease control scheme was itself in constant danger.

*Activities of the Council*

At first, while the activities of the Council were limited because of a restricted programme, the speaker, the pamphlet, and the moving picture were the main means of educational publicity; but with the broadening of the Council's programme it became possible to utilize more powerful means of publicity by use of radio and newspapers. Of recent years radio addresses have been prepared and broadcasted weekly over a large number of stations, stretching from coast to coast, and it has also been possible to syndicate newspaper articles on health subjects which have reached every newspaper in the Dominion, both French and English. The organization of a large Parliamentary Committee, composed of members of the Senate and Commons, has stimulated a much needed interest in legislative circles, and has resulted in the precipitation of important debates. Recently a popular magazine, *Health*, has been developed with the idea of keeping up public interest in the affairs of the Council and in the carrying-out of the programme planned by the Council.

The depression has unquestionably had a serious effect. Two years ago the annual grant to the Council by the Dominion Government was cancelled and a year later the grant to the provinces for the control of venereal diseases, which had been given continuously since 1920, was also cancelled. Both of

these grants went by the board at a time when they were needed most: in the case of the Council at a time when it was almost impossible to secure voluntary funds, that to the provinces when an increasing number of infected persons were finding it more and more difficult to pay private physicians and when clinics of all types were becoming more and more overcrowded.

Yet, in spite of the financial difficulties, the work has gone on. In the case of the clinics and official health department work in the provinces, machinery had become so stabilized that it was difficult to disturb it, and as a result increasing demands have been met with reasonable efficiency, although the entire financial burden has been carried without Dominion support.

The Canadian Social Hygiene Council, with a seriously diminished income, was forced to develop new projects for the raising of money. Fortunately it was possible to combine financing with education. The revival of the war-time propaganda film, *The End of the Road,* in spite of the fact that it was old and a silent picture, resulted in attracting enormous crowds in Toronto and Montreal (50,000 persons in two weeks in Toronto), with financial returns which were, to say the least, surprising. At the same time it was found that educational literature could be sold in large volume at a profit.

Following the successful showings of *The End of the Road,* it became possible to develop the new talking picture, *Damaged Lives*—the first dramatic talking picture to be produced dealing with venereal disease control, and also an educational lecture supplementary to the dramatic feature. These educational films were made in California under the direct supervision of the Council, and distribution throughout the world in various languages has already commenced. The picture has already been distributed very widely in Canada and there has been a heavy sale of literature. Editorial and news reports in newspapers of every shade of political opinion have again drawn attention to the importance of dealing with the specific diseases which were the occasion of the original foundation of the Social Hygiene Council.

The objectives of the Social Hygiene movement in Canada are necessarily broad. The ultimate objective is not only the eradication of venereal diseases, but the health of the Dominion. In the absence of a strong Dominion health policy, the venereal disease programme itself, as has been suggested, is likely to fall seriously short of a full degree efficiency. What is required is Dominion leadership with provincial co-operation; in other words, a strong Dominion Department of Health adequately financed, co-operating with the provinces to the end that there may be a co-ordinated Dominion-wide programme. Realizing this, the Canadian Social Hygiene Council will continue to carry on an educational programme, emphasizing the importance of health as a national ideal.

It is hoped that as the depression lifts, public opinion will be sufficiently strong to make a demand for a substantial Dominion-wide health programme successful. The renewal of the grants to the Social Hygiene Council and for venereal disease control should be essential in such a programme. Equally important, however, is the prospect of adequate financial support by the Dominion Government for other projects, notable among which is a programme for rural health, including the development of county health units.

# Analysis of Weekly Relief Food Orders in a Southern Ontario City

## July and August, 1933

MARGARET S. McCREADY, B.A.

*Nutrition Service, Ontario Division, Canadian Red Cross Society*

UNDER supervision, a group of trained visiting housekeepers and a volunteer dietitian worked for several weeks on the content of some of the relief diets in an Ontario city. To aid in systematizing the results a food record form and a weekly menu were used. The project was felt to be worth while from the standpoint of the experience in budgeting and the interest created for both the visiting housekeepers and the householders involved. Further, the public welfare department was interested and asked for any findings. Because of unavoidable inaccuracies, many more food records were kept than could be used in compiling results. However, nine complete food analyses were obtained, eight of these from families living on relief and one from a family not on relief—the latter for purposes of comparison and also because of the very great interest of the mother in this home and her need for strict economy.

Food supplies were purchased from local grocers through the medium of a restricted voucher with certain specifications as to the type of food. On the whole, the families with whom the food intake was recorded were found to be choosing their foodstuffs wisely and were interested and co-operative in using the type of menu prescribed. All had been on city relief for several years. The total calories as supplied by the food of each family are presented. The total caloric need for each of the families on the basis of the standards set by the Ontario Medical Association's Committee on Relief Diets is also presented. A low maintenance diet has been calculated by deducting 20 per cent from the standard diet. The deficiency in total calories for each family is also presented in the table.

On the low maintenance diet a loss of weight would be noted for a time, but no further loss usually occurs. Individuals on this diet require plenty of rest at night (9 hours) and additional rest of one hour during the day, and cannot do strenuous work. It is difficult for children on relief, for mothers of large families and for many men to observe this requirement. The general finding from the families examined (excepting families 2 and 3) indicated that they were living nearer the low maintenance level of sustenance than the standard; in fact, in two cases the diet was below the low maintenance level. The percentage of total calorie deficiency was 10 per cent, 13 per cent, 17 per cent, 18 per cent, 21 per cent, 27 per cent and 34 per cent It is to be hoped that those on relief will not have to become subnormally

ANALYSIS OF WEEKLY RELIEF FOOD ORDERS IN A SOUTHERN ONTARIO CITY—JULY AND AUGUST, 1933

| Family | No. 1 | No. 2 | No. 3 | No. 4 | No. 5 | No. 6 | No. 7 | No. 8 | No. 9 (Not on relief) |
|---|---|---|---|---|---|---|---|---|---|
| Composition of family Ages of children | 2 adults (female) | 1 adult 2 children 13, 11 | 2 adults 5 children 10, 5, 3, 2, 1 | 2 adults 6 children 12, 11, 8, 6, 3, 14 mos. | 2 adults 6 children 9, 7, 6, 5, 4, 2 | 2 adults 7 children 10, 9, 7, 5, 3, 14 mos., 3 mos. | 2 adults 8 children 16, 13, 11, 9, 7, 6, 4, 3 | 2 adults 9 children 16, 14, 12, 10, 8, 6, 4, 2, 1 | 2 adults 4 children 12, 8, 6, 1 wk. |
| Total calories—standard | 35,000 | 54,600 | 93,100 | 121,100 | 114,100 | 117,600 | 138,600 | 166,600 | 89,600 |
| Total calories—low maintenance level | 28,000 | 43,680 | 74,480 | 96,880 | 91,280 | 94,080 | 110,880 | 133,280 | 71,680 |
| Total calories—obtained | 27,505 | 49,761.7 | 92,877 | 106,745 | 96,685 | 100,703 | 118,682 | 123,864 | 73,851 |
| Total calories—deficiency | 7,495 | 4,838 | 223 | 14,355 | 17,415 | 16,897 | 19,918 | 42,736 | 15,749 |
| Family requirement in man-value | 1.66 | 2.70 | 3.83 | 5.63 | 5.13 | 5.43 | 6.43 (for 9) | 7.59 | 4.23 |
| Total calories deficient per man per day | 645 | 256 | .... | 364 | 485 | 445 | 443 | 806 | 532 |
| Relief Food Voucher | $2.45 | $3.00 | $4.50 | $4.50 | $5.00 | $5.50 | $6.00 (for 9) | $6.00 | .... |
| Purchases (garden and gifts evaluated) | 2.27 | 3.27 | 5.66 | 4.90 | 5.82 | 5.37 | 6.55 | 5.83 | .... |
| Purchases left on hand | .36 | .12 | .71 | .39 | .60 | .36 | 1.05 | .... | .... |
| Value of goods used (except bread and milk) | 1.91 | 3.15 | 4.95 | 4.51 | 5.30 | 5.00 | 5.50 | 5.83 | $4.85 |
| Relief Bread, 24 oz. loaves | (2½) | 6 | 10 | 14 | 14 | 14 | 14 | 20 | (7) |
| Relief milk, pints | (7) | 7 | 35 | 35 | 42 | 49 | 42 | 49 | (42) |
| Milk, pints according to standard | 7 | 17.5 | 56 | 56 | 59.5 | 70 | 63 (for 9) | 84 | 38.5 |
| Milk, pints, minimum low | 7 | 17.5 | 42 | 49 | 49 | 56 | 56 | 70 | 35 |
| Calcium, deficiency | .. | 7.63 gms. | 6.37 gms. | 14 gms. | 8.21 gms. | 13.12 gms. | 16.1 gms. | 26.56 gms. | .... |
| Protein calories (percentage) | 13.2% | 12.8% | 13.5% | 12.6% | 12.4% | 13.8% | 13.4 | 14% | 12.3% |
| Protein calories, Grade A (percentage) | 42% | 51% | 50.6% | 41% | 50% | 47% | 41.2% | 48.5% | 54.8% |
| Value Relief Food Allowance | $2.45 | $3.66 | $6.59 | $6.83 | $7.63 | $8.42 | $8.63 | $9.28 | $7.06 |
| Government Maximum Standard | 2.45 | 3.35 | 6.45 | 7.10 | 7.10 | 7.70 | 7.70 (for 9) | 8.80 | 5.75 |

active in order to accommodate themselves to the reduced amount of food.

*Total Calories*

The fact that the percentage of protein calories obtained on all the diets was up to standard does not indicate, however, the great deficiency of total calories. It is shown plainly that even on a low maintenance type of diet the tendency is to get from 13 to 15 per cent of calories from protein food, with approximately one-half of this coming from grade A protein.

Reckoning each family's requirement on the basis of the requirement of one man, we get a better comparison of the total calorie deficiency. It will be seen that the largest family and one with older children (no. 8) lacked excessively, even though 48 cents over the government maximum figures* had been allowed. The next greatest lack was in the family of two adults (no. 1). Living exactly within the city and the government allowance but taking one-half pint of milk per adult per day (not given by the city) the diet proved quite insufficient for two active females. They experienced hunger. Two active males on the same allowance would have had greater hunger. In general, the two adult families and the large families with older children lacked sufficient food, indicating that the government maximum figures do not allow for their greater calorie needs.

In two families where the "va ue of the goods used" was considerably (50 cents) under the amount allowed, some explanation should be made. The visiting housekeeper went to family no. 6, who had a debt of over $9.00 on their relief vouchers at the corner store. At the request of the social worker, she was to show the parents how they might live within their allowance, if not pay back some of the debt. In the two weeks' stay, $1.00 less than the city allowance was used, but 45 cents more than the government allowance for a family of nine. Well-balanced meals were prepared but, as results show, with decided deficiency of total calories and calcium. The housekeeper noted, "Family ate everything I cooked at each meal; seldom had anything left over; in fact, they would often eat over night what I wanted for next day." Evidently the family enjoyed their meals, but were hungry.

Case no. 7 had a severe and disproportioned reduction—$1.00 a week less because the 16 year old girl had been in a rest home for nervous trouble for some time previous to July. The remaining $6.00 per week, plus bread and milk, was the allowance for a family of nine. Actually a family of only seven utilized it during our stay there, as two boys, aged 9 and 7 years, were away at camp. However, it will

**Suggested food allowances as set forth in the Report of the Advisory Committee on Direct Relief to the Provincial Government of Ontario, 1932. This scale of food allowances is being used quite commonly by municipalities throughout the province although the report has been withdrawn.*

be seen that purchases exceeded their city allowance by 55 cents and were left on hand to the value of $1.05, the housekeeper feeling that when the two boys returned from camp much more food would have to be available since seven in the family had completely used the food supplied for nine. The mother, very intelligent and an economical buyer, reported how frantic she was to satisfy the appetites of her family when all were at home. The calculations were made considering the two boys at home in order to show the inadequacy of the diet usually, even though 93 cents over the government allowance for a family of nine was expended by the city. This family was unable to get a garden plot.

In case no. 3, where 45 cents over the city allowance was utilized, the explanation is that there was a donation from relatives. In using 59 cents more than the government allowance for a family of seven, this family was able to provide adequate total calories, but not adequate calcium. This indicates that for a family with very young children the government maximum allowance for a family of seven comes within 59 cents of being adequate (at July prices), in total calories at least, but would not be as nearly adequate for those families of seven with older or adolescent children. It will be noticed that family no. 3 with five children received the same voucher allowance as family no. 4 with six children, but received 4 loaves less of bread. The mother in family no. 4 was a very fine manager, while in no. 3 she was worn down by previous tuberculosis and was also less capable of wise buying. Moreover, some of the children in family no. 3 showed tubercular tendencies and were a continual worry. Considering this weakness, a larger milk supply would have been a safeguard to their health.

Aside from the three cases mentioned, the "value of goods used" compares very well with the amount of the voucher. Every family except one (no. 7) had a garden plot. Where any garden stuff was available for use it was given a value and included with purchases. These values in four cases were 30, 29, 45 and 60 cents, the latter being in a case recorded in August, when gardens were yielding more. It was apparent that the summer reduction of vouchers had come several months before there was any opportunity of utilizing garden produce. However, the opportunities for getting odd jobs may have been greater, although no family with food intakes here recorded was able so to supplement the relief.

In using a low maintenance diet for those on relief, attention has not been paid to the fact that, for many, there is added nerve strain from unemployment, with a tendency to lose appetite. When this happens there is a need for very appetizing as well as very nourishing food if a strong physique is to be maintained. Also, most labouring class families, the adults particularly, have been accustomed to eating, and required, greater amounts of food than people in sedentary occupations. They would feel the change to a diet inadequate in

total calories much more than would the professional classes. Then too, during the winter months they will be more poorly equipped with clothing and bedding and will have colder homes in which to live, with consequent need of an adequate food supply.

*Calcium (Milk)*

Adequate calcium supply to insure good bones and teeth, as well as protection against nervous diseases and wasting diseases such as tuberculosis, was shown to be an impossibility on the existing scale of milk allowance. There was a particular lack of milk in families where there were children over 12 years of age and for whom no allowance is made, although children at this age are going through a period of rapid growth. Adults suffer for lack of milk allowance. Also, for the young child, 1 to 5 years of age, nothing over one pint a day has been allowed, although 1½ pints has been shown to be necessary to obtain calcium balance, particularly on the relief type of dietary. It is readily seen how the calcium content of the diets was deficient in all cases except nos. 1 and 9.

In every family on relief the milk allowance fell far below the adequate or standard amount and even below what is termed the minimum low allowance. The latter allows one pint of milk daily for every child up to 18 years of age and one-half pint daily for each adult.

It is of interest that family no. 9, not on relief but in reduced circumstances, had cut themselves to almost a low maintenance level of food intake but had kept up a fine milk supply. Although lacking in total calories, they will be much more able to keep their health than those families getting insufficient milk.

It should be stressed that adequate milk supply is much more necessary to families living on minimum rations than to those having a more varied and more expensive diet which would include larger amounts of vegetables and fresh foods. The latter supply a good quantity of minerals and vitamins which would be almost lacking in the diet composed, to a large extent, of white flour products, macaroni, rice, sugar and corn syrup. Milk would supplement the poor diet and make it more adequate to the growing body's needs particularly.

Milk is a necessity in the relief diet also because of its use in making the cheaper foods into palatable dishes. With the one-half pint per adult per day used in family no. 1, there was no milk for drinking. It was used entirely on porridge, in sauces, soups and puddings.

*Protein*

Although it is claimed that 35 to 50 per cent of our protein food should be of grade A quality, it is evident that from 40 to 50 per cent of grade A protein was used in the families tested. Families nos. 1,

4 and 7 used very great care in selecting the food to be used on their restricted allowance and yet they used, respectively, 42 per cent, 41 per cent and 41 per cent grade A protein and desired more. Families using more than these amounts were not making a wise choice of foods, considering that their total food allowances were minimal. Nevertheless, the absolute amounts of grade A protein were not excessive, although out of proportion to the total calories.

A very good illustration of how grade A protein foods (milk, meat, fish, eggs, cheese) increase cost can be seen in the comparison of data for families nos. 4 and 5, both families of eight. The family using only 41 per cent grade A protein and 17 cents less than the government maximum allowance actually showed less deficiency of total calories per man than the family spending 53 cents over the government maximum but using 50.6 per cent grade A protein. The very much greater deficiency of calcium in the cheaper diet must be noted, however.

## CONCLUSIONS

Study of the analysis of the food of these nine families leads one to believe that the only safe way to give food relief is to allow sufficient to cover the total of the food needs of the individual members of a family. These needs vary with the age of the individual, his activity, etc. Diet lists utilizing cheaper and nourishing foods have been prepared for the different age groups by specialists in nutrition. The local price of the foods is then used in calculating the family's allowance. This local price might vary outstandingly three or four times a year when slight alterations should be made in the family's food allowance. There would continue to be very great need for guidance in the choice of foods, but the problem would be somewhat easier than at present, when often the foods which are needed cannot be recommended for use because of an insufficient allowance for food.

*Ontario Conference*

CANADIAN PUBLIC HEALTH ASSOCIATION
ONTARIO HEALTH OFFICERS' ASSOCIATION
ONTARIO MEDICAL ASSOCIATION

*TORONTO, WEEK OF MAY 28, 1934*

# Tuberculosis Mortality in Ontario*

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IN this review of 52 years of tuberculosis mortality in Ontario, as shown in the official reports of the Registrar-General, consideration is necessarily limited to the factors of sex, age, period of time and form of the disease; the available data are analyzed, therefore, for the purpose of ascertaining which, if any, of these factors contributed disproportionately to the general reduction.

In the early period of registration of deaths in Ontario, the headings under which deaths were tabulated were very different from those used in later years. In the reports for the years 1880 and 1881, for instance, all deaths are tabulated alphabetically under 121 headings including such terms as intemperance, mortification, skin disease, worms, etc. The term *tuberculosis* or any adjectival form derived from it does not appear; in 1880, 81 deaths are attributed to hydrocephalus; 2,154 to phthisis; 22 to scrofula; 21 to tabes mesenterica. In 1882, under "Tubercular Diseases (Phthisici)" are placed hydrocephalus; meningitis tuberculosis; morbus coxarius; phthisis pulmonalis (consumption); and scrofula. In 1883, tabes mesenterica is added to the group. In 1885, tabes mesenterica is missing from the Tubercular Diseases but appears under Diathetic Diseases. From 1887 to 1890, the list of causes is contracted to but 24 headings and Phthisis is the only one indicating, at this distant date, tuberculosis. From 1891 to 1896, 69 headings are used and hydrocephalus, phthisis, tabes mesenterica, and "other tubercular diseases" are given separate numbers, with no indication of any relationship, under Constitutional Diseases. In 1897, a new classification in keeping with the system approved by the American Public Health Association for the United States, Canada and Mexico, based on the Bertillon system of France, is used. Under this, 89 diagnoses are divided in 14 classes. "Tuberculosis and Scrofula" appears under "Other General Diseases", while Pott's Disease is under "Locomotor System". In 1899, there is the following note: "As in several past years, deaths from tuberculosis under its several designations have been included under one heading, 'Tuberculosis and Scrofula' ", but Pott's Disease still appears under Locomotor System.

In 1907, the International Classification of Causes of Death was first used and tuberculosis deaths are shown under the following headings:

Tuberculosis of the lungs
Tuberculosis of the larynx
Tuberculous meningitis
Abdominal tuberculosis
Pott's disease
White swelling
Tuberculosis of other organs
General tuberculosis
Scrofula
Tuberculous abscess

In 1909, tuberculosis of the larynx, white swelling, and scrofula were omitted from and acute miliary tuberculosis was added to the list.

The revision in 1921 shows tuberculosis under 12 headings:

Tuberculosis of the respiratory system
Tuberculosis of the meninges and central nervous system
Tuberculosis of the intestines and peritoneum
Tuberculosis of the vertebral column
Tuberculosis of the joints
Tuberculosis of the other organs:
a. Tuberculosis of the skin and subcutaneous tissues
b. Tuberculosis of the bones (vertebral column excepted)
c. Tuberculosis, lymphatic system (mesenteric, and retroperitoneal glands excepted)
d. Tuberculosis of the genito-urinary system
e. Tuberculosis of organs other than above

*Presented at the Twenty-Second Annual Meeting of the Canadian Public Health Association, Saint John, N.B., June, 1933.

†Department of Epidemiology and Biometrics.

Disseminated tuberculosis:
a. Acute
b. Chronic

In 1931, the same headings are used, but sub-divisions are arranged in different order.

The reports reveal, therefore, a changing picture of the conception of tuberculosis, which makes it difficult, if not impossible, to compare with any degree of accuracy the statistics of the past with those of today.

Besides these changes in the conception and classification of tuberculosis deaths, without any essential change in the disease itself, the completeness of reporting of deaths has been subject to great change. For example, the revision of the Registration Act in 1896 provided that no burial would be allowed until the death had been registered. There had been for some years an annual average increase of 5 per cent in the number of deaths registered.

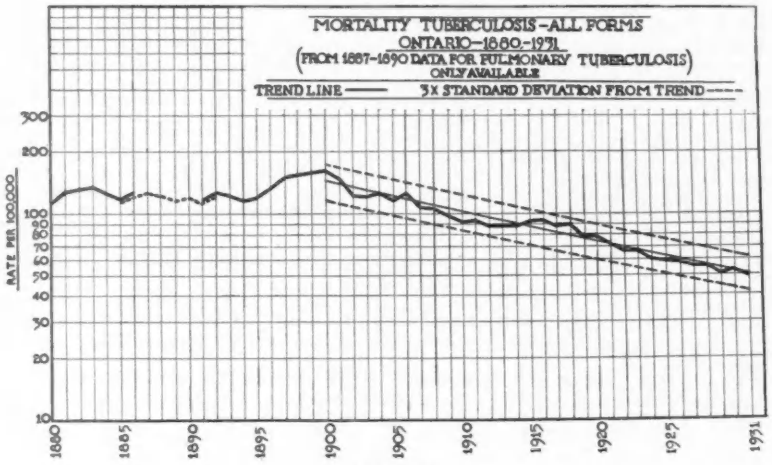


FIGURE I.
Mortality from Tuberculosis, all forms. 1880-1931.

The year following the change in the Act there was, apparently as a direct result, an increase of 10 per cent. Therefore, what the statistical data show as the peak of tuberculosis mortality in 1900 may not be the real peak. The data of that time were so influenced by artificial changes that the actual peak cannot be located with any certainty. There are other factors, too, such as increasingly better diagnosis and more frank certification of tuberculosis as a cause of death, which have operated from year to year to give a greater degree of reliability to statistics of tuberculosis mortality. In fact, conclusions drawn from the data of the early years of this survey and comparison of them with later years are liable to such gross error that analysis is confined to the years 1900 to 1931.

Figure I shows a decline in the tuberculosis rate per 100,000 from 160 in 1900 to 50 in 1931. Where has the decline occurred, in what period, in what sex, in what age-group, what population group and under what set of conditions?

*Period*

Taking a long view of this decline, there is only one period in which there is a departure from the general trend and that period coincides roughly though not exactly with the Great War. In some countries, notably Germany and Austria, tuberculosis did increase to a much more marked extent during the war years and in those countries the increase is generally attributed to the conditions attendant on the war. In Ontario, although the rates for 1916, 1917 and 1918 depart from the general trend, the rates are well within the limits of chance variation (three times the standard deviation) as indicated in the diagram. In fact, the rate of decline appears to have slackened in 1913, before the war began, and, as will be seen later, the age-groups of 10-14 and 15-19 show most deviation from the general trend, but these age-groups are not those which would be expected to suffer first from war conditions, urbanization, industrialization, or deprivation, which in reality had not made itself felt.

The rise in 1918 might be accounted for, possibly, by influenza, and the marked fall in 1919 by the weeding out in 1918 but the differences are not sufficiently great, sufficiently far from the general trend, to assure us that they resulted from any specific change in conditions.

*Form*

Analysis of tuberculosis deaths by *form* of the disease is possible only for the years since 1907, in the early years of the century all the deaths being tabulated under "Tuberculosis and Scrofula". The data for the year 1907,

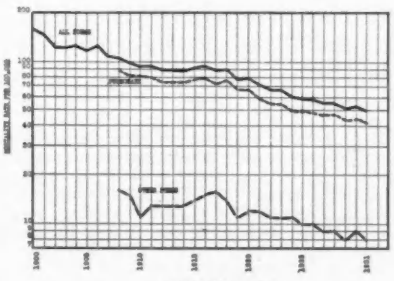

FIGURE II.
Mortality rate per 100,000 from all forms, pulmonary and other forms, 1900-1931.

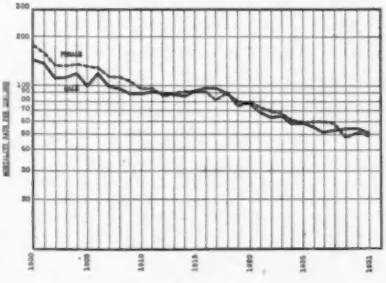

FIGURE III.
Mortality rate from all forms per 100,000 by sex, 1900-1931.

the first year in which the more detailed classification was made, are so at variance with the data since that time that comparison is out of the question. In that year, pulmonary tuberculosis is charged with 1,313 deaths and all other forms with 1,217, 952 of which are under "General Tuberculosis", a total of 2,530, while in 1908 pulmonary tuberculosis is charged with 2,129 deaths and all other forms with 382, a total of 2,511. Subsequent to 1907, however, there is little variation from year to year in the relative proportion of deaths due to pulmonary and to other forms of tuberculosis. Figure II shows that in the period 1908-1931 the decline in pulmonary tuberculosis

practically parallels the decline in tuberculosis, "all forms", and "other forms". In the early years, 1908-1915, "other forms" constituted nearly 15 per cent of all tuberculosis deaths, while for the years 1916-1931 the average is over 16 per cent of tuberculosis deaths. The difference is small and is at least partly accounted for by the changing distribution of the population, that portion of the population (20-34 years) contributing the larger part of pulmonary tuberculosis forming from year to year less of the total population (25 to 23 per cent).

*Sex*

Figure III shows the rates for males and females. From 1900 till 1911 the female rate was consistently above the male rate but since that time the rates have been, with slight irregularities, equal. In other words, the decline of the female rate was, in the earlier years, slightly more marked than that of the male rate. The factors, however, which have been responsible for the reduction in the male rates since 1911 have presumably influenced similarly the female rates. In fact, the female rate showed a slackening in the rate of decline in 1913-1918 similar to the male rate. In order to show differences between the sexes, consideration of age and sex together is necessary.

*Age*

Has the decline in tuberculosis been selective for any age-group or groups? The age specific rates are shown in Figures IV and V. Figure IV would at first suggest that the age-group under 1 benefitted much more, proportionately, than other age-groups in the early years of the century, but on further consideration such a conclusion is not warranted. The following extract from the Registrar-General's Report for 1900 indicates the quality of the figures from which these early rates have been calculated:

> "*Deaths from Tuberculosis.* This disease has maintained its pre-eminence during the year having caused 3,484 deaths during 1900. The rate is high and probably relatively higher than it should be if other countries placed the proportionate number of deaths from malnutrition and atrophy under the class, tuberculosis, which has been done in the reports since 1897. Thus all infants dying under four months when no specific cause other than atrophy, malnutrition, marasmus, scrofula, was given have been entered under tuberculosis. That the ill-defined disease of chronic wasting, with usually diarrhoea in children, may not be due to tuberculosis but to defective assimilation of food and wasting from other causes is quite true; but on the other hand that the children born ill-nourished, and which fail in health almost continuously from birth have in most instances the taint of tuberculosis is probably much more constantly true. This explanation, while not lessening the alarming prevalence of tuberculosis, in part explains the relatively high prevalence of the disease in Ontario."

Further, in 1903, 140 deaths in the age-group under 1 year were attributed to tuberculosis; in 1904 there were 7 deaths, and in 1905 no deaths in this group charged to tuberculosis, while in 1906 there were 251 deaths so charged. Such fluctuations are certainly due to different methods of tabulation or to misprint, but no record of any change in the system of tabulation is to be found in any of the reports for those years nor are there such fluctuations evident in other causes of death for the under 1 group as permit of reallocating any definite number to tuberculosis. It is certain that in these early years many infants' deaths not due to tuberculosis, as shown in the quotation from the 1900 report, were tabulated under tuberculosis, and it is just as certain that many deaths due to tuberculosis were not so tabulated. Hence the wide fluctuations with high peaks and steep declines which only indicate that the errors have not balanced each other. While there may have been a more rapid decline in the under 1 group in the earlier years of the century, the quality of the data is such that no definite conclusion in that regard can be drawn.

TUBERCULOSIS (ALL FORMS)
MORTALITY RATES FOR CERTAIN AGE GROUPS 1900-1931

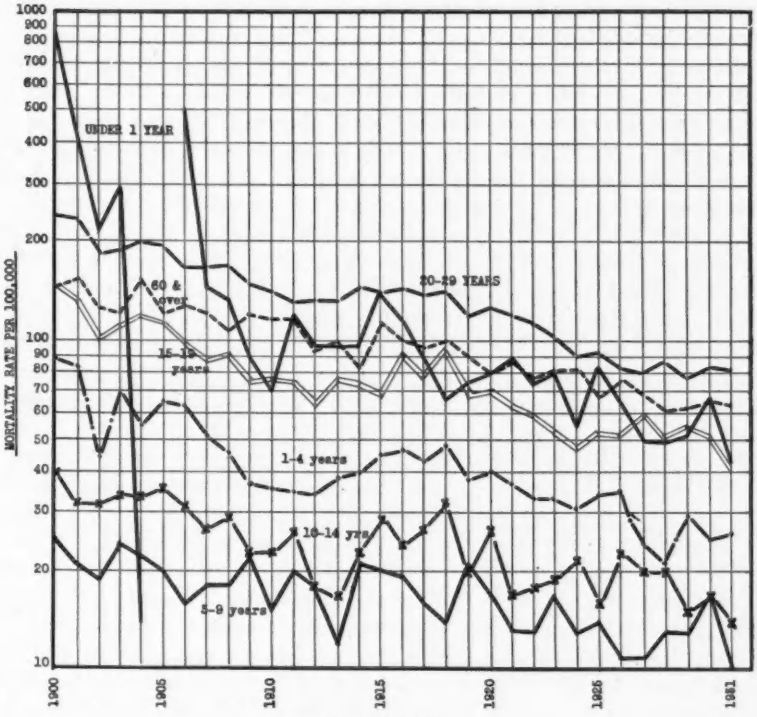


FIGURE IV.

It is to be noted here, as previously pointed out, that the two groups, 10-14 years and 15-19 years, showed greater deviation from the general trend of decline in the years 1913 to 1918 than other groups. But surely these groups would be the last to show the effects of deprivation, etc., from

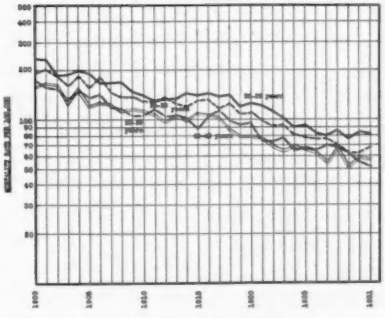

FIGURE V.
Mortality rates from all forms for certain age groups, 1900-1931.

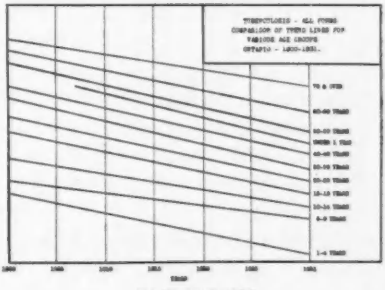

FIGURE VI.
Comparison of trend lines* for various age groups.

**Trends originally plotted on logarithmic paper. Rates are not given, as lines have been placed in position for comparison but not according to size of rate.*

either economic conditions or the war and, moreover, the peaks and depressions of these groups do not coincide with each other or with those of the group 5-9 years.

In spite of the general similarity in rates of decline in all age-groups, with the exceptions as noted, there are slight differences in some of the other age-groups. To show more readily the parallelism or divergence of the rates of decline in various age-groups, trends have been calculated and the trend lines plotted on semilog paper and transcribed to Figure VI which facilitates comparison. Here it is evident that the trend lines for the age-groups 20-29, 30-39, 40-49, 50-59, are practically parallel, indicating an equal rate of decline in these age-groups. There is a slightly slower rate of decline in the 60 and over age-groups which is readily explained. It is reasonable to suppose, such a supposition being quite in keeping with our general knowledge of tuberculosis, that a decrease in tuberculosis deaths in younger adult life would give more tuberculosis deaths in later years of life. These additional deaths, shifting from the former to the latter group, would give a slower rate of decline in the older age-group. This is in keeping with Dublin's findings in an industrial population but the differences are not nearly so marked as in his selected group. This shifting is an encouragement rather than a cause for worry in spite of the fact that it shows the extension of the problem of tuberculosis proportionately more into the older age-groups.

The trend for the under 1 age-group has been calculated for the 1906-1931 period only, on account of the unreliability of the data for the earlier years. This shorter trend line shows that the tuberculosis death rate in this age-group has apparently declined at practically the same rate as in the 20-59 age-groups. The age-groups from 5-14 years, however, and more especially the group of 5-9 years, show distinctly less rapid decline. This finding is, if true, more disquieting. There are several factors for consideration here. First, the increasingly better diagnostic facilities in the past 30 years have possibly improved the quality of the diagnosis to a greater extent in this group than in other groups. This is a supposition which cannot be established as a fact but tuberculosis was a more common disease, more commonly recognized clinically in adult life and less commonly suspected in the 5-14 year olds. It seems reasonable to suppose that the assistance which bacteriology, serology (tuberculin reaction) and the X-ray have provided, has detected from year to year proportionately more unsuspected cases in this group than in adult life. This greater degree of improvement in diagnosis in school age children would increase the number of deaths attributed to tuberculosis in this group and thus decrease the rate of decline. Secondly, the much smaller numbers in this group are influenced to a greater extent by very small changes so that a difference of one or a few deaths assumes exaggerated significance. The actual rate of decline in the school age group may be, therefore, similar to that in the adult group or be less divergent than the data indicate. On the other hand, it may well be that the younger age-groups have actually experienced a slower rate of decline and a possible explanation for this is not difficult to find. The greater number of deaths in adult life, 30 years ago as now, indicated where the problem of tuberculosis appeared to require, more urgently, control measures; the early development of sanatoria was in

response to that need and served, for the most part, that age-group. The search for the earlier cases among the school age group and the more intensive application of control measures therein are a much later development resulting from knowledge gained while the anti-tuberculosis activities were concentrated to some extent in the older age-groups. There is still another factor to consider, namely, that the peak in most problems of preventive medicine is more readily influenced than the lower levels. This probably applies to tuberculosis. If the decline in the 5-14 group is actually less than in the other groups the necessity for increased preventive effort in this age-group should be emphasized.

—ONTARIO—

TUBERCULOSIS — (ALL FORMS)

PER CENT DISTRIBUTION IN QUINQUENNIAL PERIODS

1902-1931

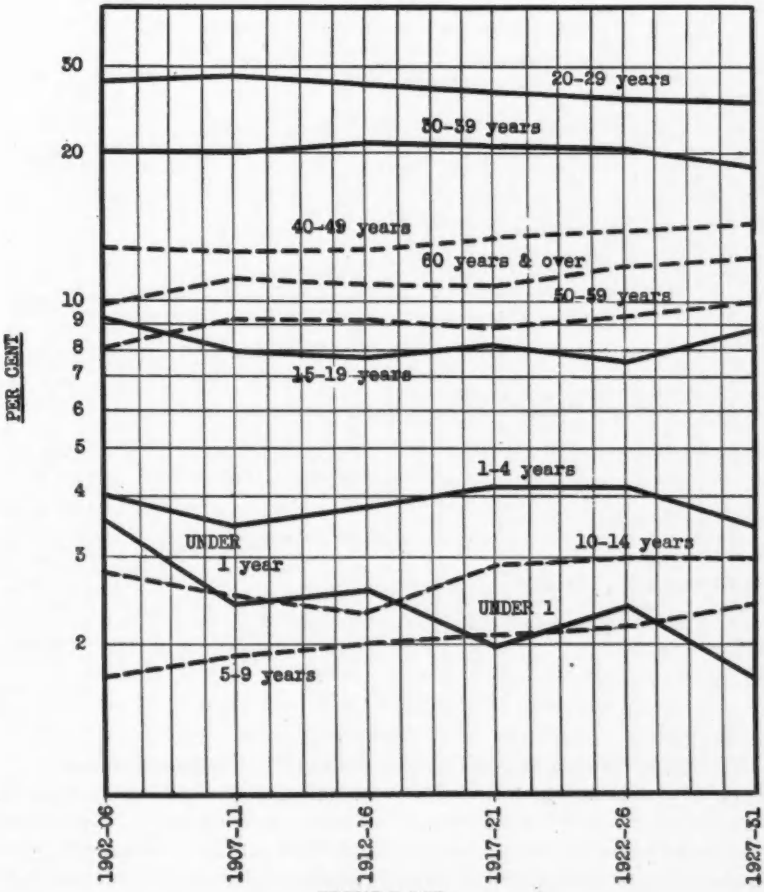


FIGURE VII.

*Age Distribution of Tuberculosis Mortality*

In Figure VII, the tuberculosis deaths have been distributed by age. This shows the slight changes in age distribution of the decreasing burden of tuberculosis mortality. While the discussion of the factors influencing the trends in various age-groups applies equally here, another factor must be taken into consideration, that of the changing distribution of the population. Part of the decrease in the portion of tuberculosis mortality contributed by the young adult group is accounted for by a decrease in the proportion of the population which this group forms; and the increase borne by the older group (40+) is accounted for in part by the increase in their proportion of the population. But the increase in the portion of the burden borne by the 5-14 year group and more especially the 5-9 year olds cannot be explained in this way as this group forms slightly less of the total population in the later part of the period.

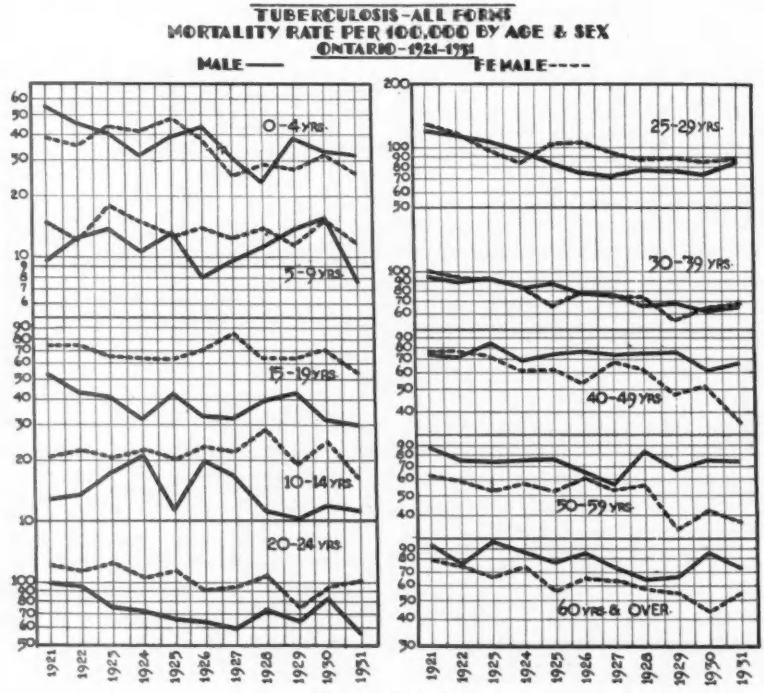


FIGURE VIII.

*Age and Sex*

This leads to the necessary consideration of age and sex combined. Unfortunately, data for the last eleven years only are available for such analysis (Figure VIII). In the 0-4 group the two sexes suffer equally. In the early group of 5-9 years, however, development of some sex factor influencing tuberculosis mortality is suggested. In seven of the eleven years, the female rate is higher than the male, in three it is equal and only once is it below the male.

(The data do not allow comparison in single years of age in order to determine the exact age at which this sex factor becomes apparent.) In the next age-group of 10-14 years the difference is much more marked, the female rate consistently above the male rate, but the difference is less than in the 15-19 group in which the female rate exceeds the male rate by from 40 to 165 per cent. From 20-24 the female rate is still persistently higher, every year, than the male rate. Thereafter, the rates are practically equal until after 40 years of age when the female rate falls below the male rate.

The difference between the sexes is apparent too in Figure IX in which the age and sex specific rates for 1927-1931 have been plotted. Practically equal in the first 5 years of life, the lowest level of tuberculosis mortality in each sex is found in the 5-9 age-group. In the male this low level is maintained

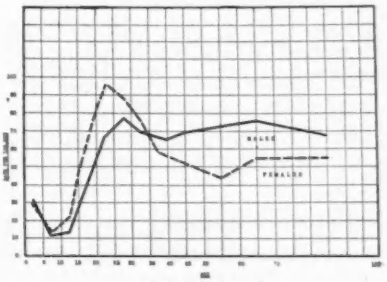

FIGURE IX.

Specific mortality rates by age and sex, Ontario, five-year average, 1927-1931.

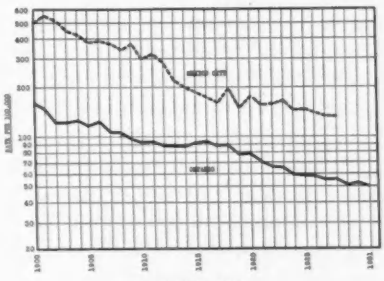

FIGURE X.

Mortality rate per 100,000, all forms, Ontario and Mexico City, 1900-1931.

into the 10-14 age-group, but the female rate rises, at first more slowly, but after 15, very abruptly to give the peak of female tuberculosis mortality rates in the 20-25 age-group. The male rate, after the 10-14 age-group, rises somewhat less abruptly than the female and gives its peak lower and later than the female, in the 25-29 group. In the later years of life, the female rate falls from its peak to a level of little more than half that peak rate, but the male rate falls but very little and maintains a rate very close to that in the peak period for the balance of life.

This difference in the rates is reflected in the age distribution of the tuberculosis deaths, the female deaths being much more concentrated in the first 3 decades. In fact, the age 5-19 provides 10 per cent of the male deaths, 18 per cent of the female; the 20-39 group provides 41 per cent of the male deaths, 47 per cent of the female; the 40 and over age-group provides 43 per cent of the male deaths, while it provides only 30 per cent of the female deaths.

The question as to why the female rate so exceeds the male rate from the early age-groups of 5-9 through the 10-14, 15-19, 20-24 and even of late years into the 25-29 group deserves study. The answer must be either (a) a greater susceptibility (or lesser resistance) or (b) a greater exposure. The fact that higher rates are found in the female than in the male in the early age-group

of 5-9 is strong evidence that the female is less resistant (or more susceptible) to tuberculosis than the male, but in the older age-group of 15-29 the factor of greater exposure must be considered also. While the mortality data as presented in the official returns do not permit analysis for such factors as exposure, environment, occupation, conjugal condition, relationship to child-bearing, etc., more intensive study and investigation of these factors is indicated by the preponderance of the female rates in early adult life.

And just as the sex difference of the higher female rate from 5-30 needs investigation, so does the sex difference of the high male rate persisting after 30. The rates in the older age-groups are based on smaller numbers and are probably subject to greater error in so far as diagnosis is concerned. However, the numbers are not insignificant. Greater exposure in the home is certainly not the factor that places the male rate above the female in these older age-groups. It is possible, however, that contact in industry and certain specific industrial hazards, e.g. silica dust, are factors of definite significance, but the bulk of the difference is not to be thus explained. If studies of a much more intensive character fail to find the difference in rates explicable by differences in exposure, it must then be attributed to differences is susceptibility. Whether the difference in susceptibility is determined by inherent qualities of sex, or by earlier selection of susceptibles from the females or by environment is a question which is open for investigation.

In that short period of 1921-1931, there are suggestions that there are differences in the rate of decline between the two sexes in some age-groups. In the 40-49 group, and to a less extent in the 50-59 group, the male rate has maintained an approximate level for the eleven year period while the female rate has fallen, but in the 60 and over group, as in the age-group under 40, there is no significant difference between the sexes in the rates of decline. The question as to why the decline in tuberculosis mortality is thus to some extent selective for the 40-59 female at once presents itself. To submit any reasonable explanation, it would be necessary to know at least when this selection began to operate. The lack of data in regard to sex and age previous to 1921, however, precludes further enquiry here into this phase of the tuberculosis problem.

*Urban and Rural*

No comparison of urban and rural rates is presented here as such a comparison made from available data leads only to erroneous conclusions. Until tuberculosis deaths are allocated to place of residence, we cannot compare the influence of the two environments. The effect of re-allocating deaths to place of residence as has been done in the Registrar-General's Report for Ontario in 1931, is so marked that the necessity for such re-allocation is at once apparent. The data in Table I have been extracted in order to show the necessity for such re-allocation.

*Position as Cause of Death*

Table II shows a comparison between deaths attributed to tuberculosis and all deaths at stated periods. The decline from first place as a cause of

TABLE I

TUBERCULOSIS MORTALITY IN CERTAIN CITIES ACCORDING TO "PLACE OF OCCURRENCE" AND "PLACE OF RESIDENCE" ONTARIO—1931

| City | Place of Occurrence | | Place of Residence | |
|---|---|---|---|---|
| | Deaths | Rate per 100,000 | Deaths | Rate per 100,000 |
| Toronto | 247 | 39 | 371 | 59 |
| Hamilton | 46 | 30 | 77 | 49 |
| Ottawa | 83 | 66 | 74 | 59 |
| London | 27 | 38 | 30 | 42 |
| Windsor | 23 | 36 | 33 | 52 |
| Kitchener | 8 | 26 | 17 | 55 |
| Brantford | 13 | 43 | 15 | 45 |
| Fort William | 25 | 95 | 21 | 80 |
| St. Catharines | 4 | 16 | 9 | 36 |
| Kingston | 21 | 90 | 18 | 77 |
| Oshawa | 12 | 51 | 13 | 55 |

death in 1900 to sixth place in 1930 and from causing over 12 per cent of all deaths in 1900 to 4.8 per cent in 1930 is too well known to justify further comment.

TABLE II

COMPARISION BETWEEN TUBERCULOSIS DEATHS AND DEATHS ALL CAUSES FOR STATED PERIODS ONTARIO

| Year | No. Deaths | Rate | Per cent of All Deaths | Place as Cause of Death |
|---|---|---|---|---|
| 1900 | 3484 | 160 | 12.2 | 1st |
| 1910 | 2291 | 92 | 7.3 | 4th |
| 1920 | 2280 | 79 | 5.6 | 6th |
| 1930 | 1791 | 53 | 4.8 | 6th |

The question as to why the decline has occurred is one that can hardly be avoided. Has it been the result of anti-tuberculosis activities, or would it have occurred without the development of such activities, sanatoria, diagnostic clinics, etc? Obviously the answer cannot be given from the data analyzed in this communication. However, in spite of the slight differences in the rates of decline in different age-groups, differences which may be in whole or in part artificial, the general similarity of the declines is a much more striking characteristic. In fact, on examining the age specific rates or the trend lines the most striking feature, apart from the decline, is the similarity of the extent of the decline at different ages, and throughout the period under review. While the control measures which have been applied have possibly accentuated the decline in young adult life and influenced, through public health education, all age-groups, it seems reasonable to attribute the general decline to other factors, more general in character and of which but little is really known.

In this regard the experience of Mexico City may be recalled. Figure X (page 81) shows the rates in Mexico City and Ontario. It is evident that in the early part of the century the decline in Mexico City was more rapid than in Ontario and for the latter half of the period, just as fast as that in Ontario. But Mexico City had no sanatoria, no diagnostic clinics, no anti-tuberculosis movement. This, however, does not prove that such activities

have not been or are not of value. The statistics and the tuberculosis problems of Mexico and of Ontario are not subject to comparison without very considerable qualification. It is highly significant that to-day Mexico City is developing an anti-tuberculosis programme. There is nothing, therefore in this reference to Mexico to suggest that there should be any slackening in the effort to control tuberculosis.

*Extent of the Problem at the Present Time*

In 1931, 1,728 deaths were attributed to tuberculosis in Ontario. Of these, 1,155 or 67 per cent occurred between 15 and 50 years of age and 1,502 or 87 per cent occurred in those under 60 years of age (Table III). Table IV

TABLE III

TUBERCULOSIS DEATHS—ONTARIO, 1931

AGE AND SEX DISTRIBUTION

| Age | Male | Female | Total | Per cent |
|---|---|---|---|---|
| Under 1 | 16 | 9 | 25 | 1.4 |
| 1–4 | 33 | 32 | 65 | 3.8 |
| 5–9 | 13 | 20 | 33 | 1.9 |
| 10–14 | 19 | 27 | 46 | 2.7 |
| 15–19 | 49 | 83 | 132 | 7.6 |
| 20–39 | 365 | 430 | 795 | 46.0 |
| 40–49 | 152 | 76 | 228 | 13.2 |
| 50–59 | 121 | 57 | 178 | 10.3 |
| 60 and over | 126 | 100 | 226 | 13.0 |
| TOTAL | 894 | 834 | 1728 | 100.0 |

TABLE IV

TUBERCULOSIS, CANCER, HEART DISEASE—ONTARIO, 1931

CUMULATIVE DEATHS BY AGE

| Age | Tuberculosis | Cancer | Heart Disease |
|---|---|---|---|
| 0– 9 | 123 | 28 | 26 |
| 0–19 | 301 | 55 | 103 |
| 0–29 | 759 | 120 | 202 |
| 0–39 | 1096 | 274 | 371 |
| 0–49 | 1324 | 762 | 755 |
| 0–59 | 1502 | 1516 | 1540 |
| 0–69 | 1636 | 2552 | 2865 |
| 0–79 | 1711 | 3594 | 4677 |
| 0–99 | 1728 | 3981 | 5818 |

shows a comparison of the problem presented by heart disease and cancer. At 30 years tuberculosis had killed 759, heart disease 202, cancer 120. At 40 tuberculosis had killed 1,096, heart disease 371, cancer 274. At 50, tuberculosis still led, having killed 1,324, while heart disease and cancer, though rapidly assuming more importance, had killed 755 and 762 respectively. Not until 60 years of age did heart disease and cancer overtake the lead of tuberculosis (tuberculosis 1,502, heart disease 1,540, cancer 1,516). These figures in no way miminize the importance of heart disease and cancer, but they serve to show the vastly greater importance of tuberculosis in the first five decades of life.

Table V shows the position of tuberculosis in relation to all deaths in various age-groups in 1931: sixth in the pre-school group of 1-4 years; second only to external causes as early as the 5-14 and 15-19 year groups, and then

first cause of death from 20-34 years of age and accounting for 25 per cent or 1 in 4 of all deaths in that group. It is second only to external causes in the 35-39 group. From 40-49 years it is fourth cause. After this age, deaths from other causes, such as heart disease, cancer, diseases of the arteries, pneumonia and nephritis outnumber tuberculosis deaths so that it ranks seventh in the

TABLE V

TUBERCULOSIS AS PER CENT OF ALL DEATHS AND POSITION AS A CAUSE OF DEATH IN CERTAIN AGE-GROUPS

ONTARIO—1931

| Age | Tuberculosis Deaths | Deaths All Causes | Per cent Tuberculosis | Place as Cause of Death |
|---|---|---|---|---|
| 1–4 | 65 | 1054 | 6 | Sixth |
| 5–14 | 79 | 928 | 9 | Second* |
| 15–19 | 132 | 621 | 21 | Second* |
| 20–34 | 645 | 2613 | 25 | First |
| 35–39 | 150 | 1027 | 15 | Second* |
| 40–44 | 121 | 1133 | 11 | Fourth |
| 45–49 | 107 | 1467 | 7 | Fourth |
| 50–59 | 178 | 3839 | 5 | Seventh |

*The group of "external causes" exceeds tuberculosis in these age-groups.

50-59 year group and does not appear among the eight chief causes of death in the 60 and over group. Although 40 per cent of tuberculosis deaths occur in those under 5 or over 39, its place alone as first cause of death in the age-group of 20-34 years and second only to external causes from 5-19 years and from 35-39 years ranks tuberculosis as a problem of gravest significance at the present time.

*Summary*

The deaths attributed to tuberculosis in a fifty-two year period 1880-1931 in Ontario are reviewed. The different terms used, the changing conception of tuberculosis, the increasingly better quality of diagnosis, the more frank certification of tuberculosis as a cause of death and greater completeness of reporting have influenced the number of recorded deaths to such a degree that comparison of the data of the past and present must be very guarded.

Though the data indicate that the highest rate, the peak, of tuberculosis deaths occurred in 1900, it is questionable, taking into consideration the factors mentioned in the preceding paragraph, whether tuberculosis deaths were more numerous then than before. In fact, the peak of the mortality is lost in such a maze of uncertainties that at this distant date we are not able to locate it with any degree of accuracy.

Owing to the unreliability of the data of the early years of the survey, more detailed analysis is confined to the period of 1900-1931. During the period, there has been an apparent decline from 160 deaths per 100,000 to 50 per 100,000, from first place and causing 12 per cent of all deaths to sixth place and causing but 5 per cent of all deaths. In 1900, 3,484 deaths were attributed to tuberculosis. In 1931, 1,728 deaths were attributed to tuberculosis. From 1900-1931, 74,455 deaths were attributed to tuberculosis.

The female rate was slightly higher than the male rate till 1911, since which time the rates for the two sexes have been equal.

The age-group of 20-29 years has shown throughout the period the highest tuberculosis death rate.

Data for age and sex together are available for the years 1921-1931 only. In this period, the peak of the female mortality is in the 20-25 year age-group and is higher than the peak in the male which occurs in the 25-29 group. After this age, the male rate exceeds the female and maintains a level approaching its peak for the balance of life while the rate in the female drops to little more than half its peak rate.

The decline has been, in general, fairly regular throughout the whole period.

All age-groups have shared in the decline and to nearly the same degree. The death rates in the age-groups of 20-49 years appear to have fallen at a slightly faster rate than those in the older age-groups and at a noticeably faster rate than in the age-group of 5-14 years and more particularly 5-9 years. If the actual situation is reflected by the recorded deaths, this difference in rate of decline indicates the necessity for greater concentration of effort in the younger age-groups. Apart from these slight differences, which may be artificial, the similarity in the rates of decline is striking.

The distribution of tuberculosis deaths has changed but slightly. In the quinquennial period, 1900-1904, the 20-39 year group contributed 47 per cent of all tuberculosis deaths. In the period 1927-1931, this group contributed 44 per cent of all tuberculosis deaths. The older groups of 40 and over contributed 29 per cent in period 1900-1904 and 37 in the 1927-1931 period. These differences are accounted for in part by the slower rates of decline in the older age-groups and in part by the changing distribution of the population of the province. In the period 1900-1904, the group 5-9 years contributed 1.7 per cent and in 1927-1931, 2.4 per cent of all tuberculosis deaths This increased portion of the tuberculosis burden, borne by this group, if the recorded data reflect the actual situation, is accounted for wholly by the slower rate of decline in this age-group which has not increased in the constitution of the population.

Though in 1931 tuberculosis had fallen to sixth place as a cause of all deaths, causing 1,728 deaths with a rate of 50 per 100,000, it still retained its position of first place in the age-group of 20-34 years and was second only to external causes from 5-19 and from 35-39 years.

Tuberculosis must, therefore, be considered at the present as one of the most important public health problems in the province.

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## STATE MEDICINE

THE recent reports of the "Committee on the Cost of Medical Care" in the United States, the reports of the Royal Commissions in British Columbia and Alberta, and the resolutions passed by various political bodies throughout Canada, indicate a widespread dissatisfaction with the present system of providing medical care for the great bulk of our people.

Failure of definition with concurrent failure to analyze the aims of any state aided or state controlled system of medical practice has led to much confusion of thought on the subject of state medicine. To some, state medicine has become synonomous with compulsory sickness insurance; to others, with state care of the indigent with or without contributions to the hospitalization of all. To a yet more advanced group the term means the complete socialization of all the preventive and curative medical resources of the country.

Any discussion of the desirability or practicability of state medicine in any form must follow certain basic considerations. Is the purpose of state medicine to provide compensation for losses sustained through illness, as is the primary purpose of any insurance—accident, hail, burglary or fire; or is its object the building of a fitter race and the improvement of the public health?

Practically all countries that have adopted so-called "state medicine" have developed insurance schemes. Great Britain, for example, has her health insurance scheme, but has developed under separate control and independent of it her public health service which has come to play such an important rôle in her medical services. These two services, one definitely curative, the other preventive, overlapping often as they must, do not provide the medical services required. In addition, the poor law medical service and the voluntary hospital system are required to provide adequate medical facilities for the British people. The

several types of medical services required might lead many to agreement with the critic who said "the dominant motif . . . in health insurance is the relief of poverty, not the preservation of public health."

A second consideration accepted too often by many is that expenditure made now on medical treatment will lessen the demand for it in the future. Much evidence has been accumulated that leads to the belief that expenditure for medical care, unless directed primarily to the removal of the causes of ill health, may tend to occasion a further increase in such expenditures in the future. Too little thought has been given to the portals by which ill health enters the body politic. The great and time honoured tradition of the medical profession that life must be conserved while any spark continues to glow, may be a factor in this, greater than has as yet been estimated. The tradition may be forced to yield to the logic of the sociologist or the eugenist.

A third basic question is whether it is desirable or possible to make accessible to everyone all the available resources of modern medicine. The desirability of this may be unquestioned but it must be borne in mind that beyond a certain point such a desirable condition of affairs may become inconsistent with the social structure. No community or state can assume unlimited liabilities and the state may decide at some future time that it can accept responsibility for all only when there is conceded to it greater control over both the numbers and the physical quality of its personnel from generation to generation than has as yet been considered desirable or practical.

A still more fundamental problem is touched on when one considers the reasons why large groups of the population are unable to meet the cost of medical service. Is it that the cost is too high? At the moment many of these same large groups are unable to meet the cost of bread and butter. Are the prices of these commodities too high? Undoubtedly some of the forces which render bread and butter unattainable by many by their own efforts to-day are working in the same direction to place medical and hospital services beyond the purchasing power of a large proportion of our citizens.

The complete socialization of all the medical resources, both preventive and curative, of the country could only follow other social and economic developments. The state would become the employer of all labour and medical attention by civil service physicians and state hospitals would be given in lieu of a portion of each worker's wage. Russia, so far, is the only country which has attempted anything of the sort. An alternative suggestion has been made that all payments for medical and hospital services be made from public funds. This would seem to be only a variant of the sickness insurance idea and so for the moment need not be considered. One hesitates to believe, in view of

our past history, that the tremendous social upheaval necessary to bring about such changes as have occurred in Russia is imminent so that any discussion of this type of state medicine would appear untimely.

Some changes appear necessary in the scheme of medical service to-day. Three weaknesses are complained of:

1. The cost of medical care.
2. The unequal distribution of physicians and hospitals.
3. The inability to obtain outside the largest centres those refinements of diagnosis and treatment, together with the preventive measures of which information has been spread abroad by magazine and newspaper.

Several weaknesses are apparent from the physician's point of view but it must be borne in mind that the first changes to be brought about by pressure of public opinion will be the correction of those shortcomings apparent to the public and not those most evident to the profession.

The changes suggested follow naturally:

1. A more widespread distribution of the cost of medical service over all the population.
2. The need for better facilities by which diagnostic and therapeutic measures are available for all.
3. The need for the intensive and increased use of all types of preventive medicine.

It would appear that only by some form of popular levy can the funds to provide such changes be raised, however gradual the approach to the ideal, and it is felt by many that this should take the form of a special contribution rather than an increase in the general tax rate. All who benefit must share in the cost on the basis of income.

No scheme of compulsory insurance as yet in operation has provided for all these changes, yet all are included in one or more of the present schemes. Voluntary insurance schemes have fallen far short of providing an adequate solution of the problem; compulsory schemes have demonstrated that they might provide this solution. Is it asking too much of the Canadian genius that it evolve, not at once, but over a longer or shorter period, a scheme of compulsory health contributions which will ensure to all its citizens adequate medical service based on the time honoured relationship between the family and the family physician?

*H. C. Cruikshank.*

# QUARTERLY LETTER FROM GREAT BRITAIN

GEORGE F. BUCHAN, M.D., F.R.C.P., D.P.H.

*London*

### SIR GEORGE NEWMAN, K.C.B.

THE English Public Health Service is very proud of its Chief Medical Officer, Sir George Newman, K.C.B. I may as well confess at once that I am one of his many faithful followers. I have read all that he has written and never miss an opportunity of going to hear him speak. His oratory is as inspiring as his writings. Each year Sir George writes two reports, one "On the State of the Public Health" and the other on "The Health of the School Child". These reports should be read word by word by every medical officer who can read the English language, no matter to what country he belongs. Sir George is a world figure and his Annual Reports are of universal interest and application. On this occasion I propose to deal only with his report "On the State of the Public Health", leaving his other report for a subsequent communication.

### ON THE STATE OF THE PUBLIC HEALTH

THIS report is a considerable volume of some 265 pages, but the literary style of the author makes it easy reading and the end is reached all too soon. To those of my Canadian colleagues who are public health officers I need not say that the report deals with all the subjects with which a public health medical officer is concerned — epidemiology, maternity and child welfare, the insurance medical service, tuberculosis and venereal disease, food, cancer, and international health. The statistical section of the report shows that good health is maintained in England in spite of unemployment, but the alarming fact is stated that owing to the falling birth rate the total population of England and Wales will, at present rates, attain or pass its maximum by the middle of the present century.

Sir George Newman particularly calls attention to the diseases which are mainly responsible for the death rate of 12 per 1,000 recorded in England in 1932. These are (1) diseases of the heart and circulatory system, (2) cancer, (3) bronchitis, pneumonia and other respiratory diseases, (4) diseases of the nervous system, and (5) all forms of tuberculosis. He also points to the continued fall in the infant mortality rate and notes that in the last decennium, 1921-30, England has been saving infant lives at the high average of 40,000 a year, as compared with what it saved in the relatively good decennial period 1901-10. He indicates, however, that with the falling birth rate and this great saving in infant life new problems arise particularly in connection with the probable saving of weakly and defective children.

### BETTER HEALTH

WITH some two million persons unemployed in Britain in the present time, it may be wondered why Sir George Newman is able to show that the nation continues in good health. The reasons are no doubt various. Many more women are employed to-day than in pre-war days and are adding to the income of many homes, thus preventing the destitution which might otherwise lead to increased mortality and morbidity rates. Indeed it may be that the total figure of unemployed persons requires some adjustment on account of the different character of the employed persons when comparing it with similar pre-war figures, and that, after all, things are not quite so bad as they seem. But whether this be so or not,

the fact is that the national health is exceptionally good and it is impossible to dissociate this fact from the other fact that better national provision is made for health in England than ever has been made before.

In this matter let Sir George Newman tell the story in his own inimitable way.

"A few weeks ago a Medical Officer of the Health Department of the League of Nations made a brief survey of health conditions in this country in regard to this particular problem. He made a remark which may suggest part of the explanation. 'I have inspected in many countries and one difference I find is this: in England you have the medical machinery *already available* for meeting exceptional circumstances, and you are using it.' The observation is relevant. The Public Health Services of the Local Authorities cover the entire country. Those services have been growing up slowly for a century. They began long before with a provisional scheme of Poor Law relief; this was reorganised in 1834 and developed in due course into a Public Health Service, which, since 1875, has been extended to meet the environmental, sanitary, hospital, and housing needs of the people. Since the war one-quarter of the whole population has been rehoused or is living in reconditioned houses.

"At the beginning of the present century a further expansion included public medical services for mothers, for infants, and for school children (now incorporating maternity provision, 2,800 educational maternity and child welfare centres for mothers and children, universal medical inspection of elementary school children with 1,800 treatment clinics and the provision of after care); twenty years ago came public medical services for special diseases (such as tuberculosis); and more recently a public hospital service for infectious and general diseases. At the maternity centres and in association with the school medical service there are effective arrangements for dealing with undernourishment and there is the Education (Provision of Meals) Act (now incorporated in the Education Act of 1921). In this way an immense scheme of supplementary feeding is in daily operation for nursing mothers and for children up to the age of fourteen years. For instance, in 1932 there were provided 62 million school meals, and 900,000 other school children received supplementary milk.

"But there are other agencies and influences in operation. There is the whole system of poor relief and public assistance. The number of persons (men, women and children) in receipt of domiciliary or institutional relief on 1st January, 1933, was 1,375,645. There is the unemployment insurance, which assists approximately two million unemployed persons at the present date. There may be differences of opinion as to its administration, but there can be no doubt of its value as a form of assistance. There is the health insurance service in which 16,000 doctors are at the medical service of 16 million persons over sixteen years of age, with cash benefit, medical and disablement benefit, and a series of additional benefits for dentistry, nursing, etc. Where by failure to pay contributions due to unemployment these persons may unfortunately cease to be entitled to the insurance medical benefit, they can, in their need, have recourse to the public assistance medical service which is to a large extent rendered by the same medical practitioners as serve on the panel. Of this vast group of insured persons as many as 8 million receive benefit every year."

### NUTRITION

IT is relevant to a discussion of the present good health in England to consider the subject of nutrition. This is a matter which is dealt with in several parts of the Annual Report of Sir George Newman on the State of the Public Health. It is a fact that

many people within the last few years have had less money to spend, but in this connection it is likely that the last item in the weekly budget to suffer is the food item. Unemployment insurance and public assistance, and not uncommonly the presence of some worker, even if a woman or a junior, in the house, have all prevented any serious evidence of malnutrition amongst the nation as a whole. It is perhaps also correct to say that in our prosperous days we all ate too much of everything and that the present reduction of rations is within limits not to be altogether decried. We have now perforce to be careful and so arrange our consumption of food that we get a maximum of benefit from a minimum outlay. In these matters the nation is being well advised firstly by the Advisory Committee on Nutrition appointed by the Minister of Health and more recently by the publication of a report by the British Medical Association.

### BRITISH MEDICAL ASSOCIATION NUTRITION REPORT

THIS report was the work of a committee set up by the British Medical Association "to determine minimum weekly expenditure of food stuffs which must be incurred by families of varying size if health and working capacity are to be maintained and to construct specimen diets." The report has just been issued. They conclude that 3,400 calories per man per day, including 50 grammes of first class protein, are required as the essential minimum to maintain health and working capacity. There is no new evidence in the report that the old figures of 3,000 calories and 37 grammes of first class protein should now be discarded. These figures have stood for a very long time and more recently have received corroboration from the investigations carried out at St. Andrews, Reading and Cardiff by Professor Cathcart, F.R.S., of the University of Glasgow. The scale of man values adopted by the Committee of the British Medical Association is that of Cathcart, which is slightly higher than the International scale agreed at Rome in 1932. But in spite of these higher values the report is exceedingly useful and provides excellent education on dietetics. The cost to maintain a man in health and working capacity according to the standards laid down varies in different parts of the country from 5/5d. to 6/4½d. On this basis it would appear that it is not unlikely that many families have too little to spend on food, but a communication from M. L. Clark appearing in the issue of the British Medical Journal of November 25th, 1933, would appear to show that the consumption of the adult man out of work falls quickly from 1.0 to less than 0.77. It is difficult to say precisely the food required to maintain health and working capacity, but from the report of Sir George Newman it would appear that on the whole the people of England at the present time are adequately fed and that sound constitutions are being maintained.

### DR. R. E. WODEHOUSE

IT was a pleasure to me to note in the October number of the Canadian Public Health Journal that Dr. Wodehouse had been appointed Deputy Minister of Pensions and National Health. I had the delight of meeting Dr. Wodehouse when he came to England on a League of Nations Interchange in 1925, and spent much of his time together with public health officers from other countries with me in my Borough of Willesden. I have met Dr. Wodehouse on several occasions since and have maintained frequent correspondence with him. In England he is particularly well known in connection with his tuberculosis work in Canada and his charming personality has endeared him to many Medical Officers of Health and Tuberculosis Officers in the old country. We all wish him the greatest possible success in his new post.

# PUBLIC HEALTH ADMINISTRATION

## *Report of the Hamilton Health Survey*

J. W. S. McCULLOUGH, M.D., C.M., D.P.H.

*Chief Inspector of Health, Ontario Department of Health*

LAST spring the City Council of Hamilton appointed Miss Laura A. Gamble, Reg.N., and Professor A. Grant Fleming, M.D., D.P.H., to conduct "a survey with a view to amalgamation of the health activities of the Board of Education, the Babies' Dispensary Guild and the Board of Health." The members of the survey were further asked to study and report on all the health services of Hamilton and to make whatever recommendations were considered necessary to provide the city with an adequate public health service at a minimum of expense.

Hamilton is an industrial city of 155,000 inhabitants, eighty per cent of the population being of British racial origin. Situated at the western end of Lake Ontario, with excellent rail and water connections, the city has had a remarkable growth in a relatively short period. There are splendid water and sewerage facilities, several hospitals, including a large general hospital, and a well conducted sanatorium for tuberculosis. For years the general health of the city has been satisfactory.

*Public Health Services in Hamilton*

The official health agency of Hamilton is similar to that of other urban municipalities of Ontario, namely, a local board of health of five members including the mayor and the medical officer of health. In Hamilton, and as a rule in most Ontario cities, the remaining three members of the board are chosen from the members of the council.

For many years two other health agencies have been officially recognized, the Babies' Dispensary Guild and the Board of Education. The Guild is entirely supported by official grants from the city and very efficiently looks after the welfare of babies, while the Board of Education, through its medical and nursing service, carries on medical inspection of schools. In addition, the Victorian Order of Nurses, the St. Elizabeth Visiting Nurses' Association, and the Hamilton Health Association, associated with the Mountain Sanatorium, the General Hospital and the Red Cross Society, participate in public health work. The various service clubs also have contributed materially to the promotion of public health. Under these conditions there was, as the Survey points out, overlapping and duplication of effort, including an undesirable competition between certain of the official agencies.

In the Report careful consideration is given to local public health expenditures, comparisons are made with cities of similar population in the United States and an appraisal is made of the public health activities of the city. The total official expenditures for the year 1932 were $198,872.32, or one dollar and eighteen cents per capita. This expenditure is exceeded by but one of the group of cities mentioned. Appraisal of the value of health activities carried on shows a score of about 85 per cent, which, as the Survey remarks, "is relatively high and indicates a satisfactory quantity of public health services in Hamilton".

The remainder of the Report is taken up with a description of the individual items of public health work

maintained by the city and concludes with a recommended budget of $163,412.82, which represents an approximate annual saving of more than $20,000.00 through amalgamation of the official services.

*Ceneral Findings and Recommendations*

Chief interest in the Report centres about the findings and recommendations made by the Survey. These are:

*General Findings*

1. In so far as health conditions can be measured, the general health of the City of Hamilton is satisfactory, which reflects credit upon the health organizations and the authorities responsible for furnishing the money that is required to maintain these health organizations.
2. Health services are provided in Hamilton by several organizations. No one organization has been recognized as the leader, or as being the responsible authority. As a result, there have been rivalry and duplication of effort, which means a waste of time and money.
3. The health programme for the city has not been planned with definite objectives, and the result has been that the programme is unbalanced and the general medical profession have not been brought into the programme.
4. Better results would have been obtained if the staffs of the health organizations had been adequately trained and supervised, and made to work toward definite objectives.

*Major Recommendations*

1. That the health organization of Hamilton be built around the Local Board of Health.
2. That the Board of Health ask the Academy of Medicine, the Registered Nurses' Association and the Dental Societies each to appoint an advisory committee, the members of which would confer with and advise the Board and the Medical Officer of Health concerning their particular field of activity in and in relation to the Department of Health.
3. That the Health Division of the Hamilton Council of Social Agencies be asked to act as a Health Council for Hamilton.
4. That the health services of the Board of Education and the Babies' Dispensary Guild be transferred to the Department of Health, and the staffs absorbed into the Department.
5. That the Department of Health for Ontario be asked so to amend the Public Health Act as to provide standards of qualifications for appointments of technical and professional workers to health departments.
6. That the Department of Health recognize the family physician as the most desirable agent for health supervision.
7. That, for purposes of health administration, the City be divided into four or five Sanitary Areas, with a health centre in each area.

*Consolidation of the Three Official Agencies*

In the writer's opinion the most important features of the report are the first and fourth of the major recommendations in which consolidation of the three official health agencies of the city in the Department of Health is suggested.

One cannot avoid the conclusion that while medical inspection may satisfactorily be managed by a competent school service under the Board of Education, such a plan of administration is more expensive than if carried on under a competent Department of Health. Under the dual system there is bound to be duplication of services by nurses of the health department and those of the schools. Moreover it is an anomalous situation to have the official health supervision of the child divided, as

it nevitably is, under two or three services. In Hamilton, for example, up to school age the child is controlled partly by the Health Department and partly by the Babies' Guild; in the school age, partly by the Health Department and partly by the Board of Education; after school age, entirely by the Health Department. Such a condition of affairs creates confusion, involves greater public expense, creates jealousy and needless competition, and, to some extent, negatives effort.

*Suggested Amendments to the Public Health Act*

Another recommendation is that the Public Health Act be amended to allow for seven members of the local board, two of whom would be from the ratepayers at large. While this is a minor matter, one cannot see any good reason why seven members of a board of health would be more useful than five. Nor does one see why appointed members would likely be of greater value than elected ones. Under the existing law the council of a municipality may appoint three members of the board of health from the ratepayers outside council. In Hamilton the council has apparently found it more satisfactory to name the members of the board from the elected members of council.

To the second recommendation there can be no objection. It is an advantage for the medical officer of health to be in a position to seek advice from local professional bodies. It is of the greatest importance that he keep on the best of terms with such professional bodies and particularly with the members of his own profession. The success or failure of a department of health is more or less dependent upon the good will of the practising physician.

*Relation of the Hamilton Council of Social Agencies*

Another recommendation is that the health division of the Hamilton Council of Social Agencies be asked to act as a Health Council for Hamilton in order to provide an opportunity for a continuing study of the health problems of the community. One doubts if any voluntary organization should be given official recognition of the kind. Hamilton seeks through the Survey to be relieved of a similar embarrassment; it is doubtful if the council will voluntarily enter another. With respect to the continued existence and activity of the Council of Social Agencies in health matters, there can be no objection. The services of its health division might be of high value. But the Board of Health should be allowed to choose its own advisers.

*The Family Physician as a Health Supervisor*

One of the major recommendations is that the family physician be recognized as the most desirable agent for health supervision. It is high time that this suggestion was put in practice. The family physician, knowing the family and seeing the beginnings of disease, should be the best health supervisor He has earned recognition of the kind. The general practitioner is gratuitously giving to the public at least $100,000 worth of service every day. Free medical services to hospitals overtop all other hospital costs put together. While the plumber, the grocer and all other tradesmen receive full value for their wares and services, the doctor is expected to give his services either for nothing or at half price. Too often he is scolded by press and public if he fails promptly to respond to the call of the indigent. It is time that doctors were employed in public health services and paid for their work.

*Other Recommendations*

Other recommendations such as the provision by the Ontario Department of Health of standards of qualifications for professional and

technical workers, division of the city into sanitary areas for more ready administration and that the present staff be encouraged and given opportunity for further study and experience, are well-considered and sound.

Any criticism of the Report relates to minor matters only. They are matters about which there is bound to be a variance of opinion. The Report indicates close study and careful thought and will form a valuable basis for studies of other fields of health administration. Considering the co-operative spirit with which it has been accepted in Hamilton, it is likely to compass a solution of the difficulties hitherto existing in that city. Altogether it is a production reflecting credit on the members of the Survey.

# PUBLIC HEALTH NURSING

## *Home Sterilization of Maternity Articles*

A. L. MCNABB, D.V. SC., AND C. R. SMITH, B.S.A.
*Division of Laboratories, Ontario Department of Health*

DURING the past year experiments designed to yield some definite bacteriological tests of the efficiency of various recommended sterilization procedures have been conducted in the Central Laboratory of the Ontario Department of Health.

The older method of sterilizing maternity articles in live steam by suspension in a wash boiler, with subsequent oven drying, has proved so cumbersome and inconvenient that hot air or oven methods have been recommended generally by maternal welfare and nursing organizations.

It is well known that live steam is much more effective in sterilizing than dry heat at the same temperatures. Bacteria are more readily killed by moist heat; there is greater power of penetration and a final release of latent heat through condensation. In carrying out sterilization by means of the hot air method, it is therefore necessary greatly to increase the temperature and time of exposure to produce the desired result. When hot air sterilization is practised, it is imperative that operators strictly observe the recommended temperature and measure the length of exposure from the time the oven reaches the desired temperature.

The aim of these experiments was the destruction of vegetative and spore forms of bacteria as judged by cultures in beef infusion broth containing 1 per cent dextrose incubated at 37° C. under aerobic conditions. Anaerobic cultures were not made. The sterility herein discussed is therefore subject to this definition but it is believed that the majority of the human pathogenic bacteria were destroyed.

It was decided to use a temperature of 300° F. in these experiments and to determine the necessary time of exposure. This temperature can readily be obtained in the ovens of ordinary cook stoves. A reliable mercury thermometer should be used, as ordinary oven heat indicators are unreliable. In conducting the experiments, bundles containing 6 to 8 perineal pads, wrapped with a single or double cloth covering suitably contaminated, were placed in an ordinary gas oven. Great care was taken to leave ample space for the free circulation of heat be-

tween and around the bundles. After heating, the bundles were opened in a draught- and dust-free room and 4 samples were cut from each bundle. These were cultured directly in beef infusion broth containing 1 per cent dextrose and incubated at 37° C. for 6 days. The same bundles, after sterilization, were used in subsequent experiments. All experiments were done in duplicate and some in quadruplicate. Studies are being made to determine the factor of the size and density of the bundle in determining the length of exposure. Bundles of a uniform size, as mentioned, were used in these experiments.

Clean, uninoculated bundles, as prepared by the Nursing Division, were heated in a gas oven at 300° F. for one hour. Twelve test samples showed growth in each instance. Two similar bundles were heated at the same temperature for 1½ hours and 3 of the 12 samples taken showed growth of a spore-forming bacillus of the B. mesentericus group. Similar bundles heated at 300° F. for 2 hours proved sterile on test. While an exposure of 2 hours apparently proved efficient with bundles of newly prepared material, bundles prepared under different environmental conditions would probably give different results. Subsequent bundles were therefore contaminated with materials known to contain various organisms.

Previously sterilized bundles were inoculated with citrated blood containing strains of haemolytic streptococci isolated from throat swabs and one strain isolated from a case of puerperal sepsis. Several of the bundles were exposed for 1½ hours at 300° F. and the remainder for 2 hours. All test samples showed no growth.

Similar bundles were inoculated with feces containing B. typhosus and B. paratyphosus Beta and exposed for 1½ hours under similar conditions. All samples showed growth of spore-forming and coliform organisms. B. typhosus and B. paratyphosus Beta were not isolated. Similarly inoculated bundles exposed to the same temperature for 2 hours gave the same results. An exposure of 2½ hours at 300° F. was necessary before cultural tests showed these packages bacteriologically sterile.

From these results, an exposure of 2½ hours appeared to be sufficient to procure sterility under the test conditions. To provide a satisfactory margin of safety, the exposure was set at 300° F. for 3 hours in view of the wide variation possible in the bacterial flora, in the size of the bundles and in the oven heat in different homes.

### CONFIRMATION TESTS

Final tests were made as severe as possible. New unused bundles were inoculated with feces, urine, contaminated blood, hay chaff, putrid creek water, floor sweepings, streptococcal cultures and cultures of the spore-forming organisms which had resisted 2 hours' contact with 3 per cent sulphuric acid. Three of the bundles were exposed to 300° F. for 3 hours and proved sterile. Two other bundles were exposed in a domestic coal oven and were found to be sterile on test.

Similarly inoculated bundles were wrapped in heavy paper and shipped by mail to the branch laboratories at Fort William and Ottawa, with the request that they be sterilized as directed, rewrapped and returned. Some of the bundles were covered with 2 layers of cloth. In the Ottawa laboratory the bundles were heated in a gas oven and returned in 2 days. Of the 4 samples tested from the bundles with a single cloth wrapping, 2 proved sterile while 2 showed growth. The bundle with the double covering in the same parcel proved sterile on test. In the Fort William laboratory an electric oven was used and the bundles were returned within 6 days. Again, the single covered bundle showed evidence of contamination, whereas samples from the double covered bundle showed no growth. These shipments showed the superiority of double cloth coverings over single coverings.

### WRAPPING FOR STORAGE

For storage purposes an additional relatively non-porous outside wrapping is necessary. Heavy brown paper was chosen as being easily obtainable. It is preferable that this paper be clean, and, if possible, sterile. The ordinary hand iron suggested itself as a means of sterilization. Accordingly, many types of used heavy brown paper were collected from various sources and subjected to a thorough ironing on both sides with a hot iron, after which samples were cultured for growth. All six types of paper tested had shown profuse growth before ironing. After ironing, no growth was apparent after 24 hours' incubation. After 48 hours 2 showed growth, and after 96 hours 3 had shown growth. The remaining 3 ironed papers showed no growth on culture. In all cases of growth, spore-forming organisms were isolated in pure culture.

While complete sterility of the paper was not obtained by the ironing process, the interval before the appearance of growth indicated that destruction of the vegetative forms had taken place. Three of the used wrapping papers had been sterilized. Unfortunately such a procedure cannot be standardized, but a thorough, slow ironing with a hot iron is necessary. Both sides of the paper should be ironed, the inside being done last and immediately wrapped around the sterilized bundle as it is removed from the oven. Bundles should be wrapped with two thicknesses of paper and the contents marked on the outside.

### STORAGE TESTS

As a storage test, bundles were severely inoculated as before, exposed to 300° F. for 3 hours, immediately wrapped in hot, ironed, heavy brown papers collected from various sources, and stored. These bundles were placed in a closed cupboard, on a frequently used laboratory bench, and on a high open shelf. A control bundle proved sterile immediately after heating. Bundles were opened after 5, 8 and 16 days and tested for sterility. All test samples showed no growth at those times. We believe that 2 weeks is a safe and convenient limit for storage of sterilized maternity articles. If not needed within that time, the sterilization and wrapping procedure should be repeated.

### SUMMARY

Packages containing 6 perineal pads were prepared with single as well as double thicknesses of unbleached cotton.

After preliminary tests it was found that 300° F. for one hour was not sufficient time to render these packs bacteriologically sterile, while 300° F. for 2 hours yielded the desired result.

Further experiments have been carried out in which the pads have been inocu'ated with streptococci, staphylococci, B. typhosus, B. paratyphosus Beta, and B. subtilis, as well as with floor and street dust and contaminated blood clot material. It was found that 300° F. for 3 hours destroyed these organisms.

Heavy brown paper thoroughly ironed with an ordinary hand iron showed a marked decrease in the bacterial flora. Packs rendered sterile by suitable exposure to heat and covered with two thicknesses of sterile brown paper may be stored in a cupboard ready for use for a period of two weeks, after which they should again be sterilized.

# NEWS FROM THE FIELD

### Twenty-Third Annual Meeting, Montreal, June 11, 12, 13, 1934

FOLLOWING the policy of meeting in turn in eastern, central and western Canada, the Executive Committee accepted the hearty invitation extended by the Provincial Bureau of Health, Quebec, and the city of Montreal to convene the twenty-third annual meeting in Montreal during the week of June 11th. Last year the meeting was held in the east in Saint John, N.B., and the choice of Montreal in the central area will be received with appreciation by the members of the Association who remember the several splendid meetings which have been held in that ideal convention city. The opportunity to meet the members of the provincial and municipal departments of health and to learn from the executives of the county health units of the progress that is being made in meeting rural health problems throughout the province of Quebec is one that will be appreciated by every member. The meetings of each of the Sections will form an important part of the convention and the local committee already has made plans which ensure the success of the meeting.

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### Laboratory Section Meeting

THE second mid-year meeting of the Laboratory Section, which is now recognized as the national group of those engaged in bacteriology, pathology and chemistry as related to public health, was held on December 22nd in the Royal York Hotel, Toronto. Held during the Christmas vacation, this meeting of the Section gives the opportunity for the presentation of new work at a time that is convenient for the members.

More than 100 members were in attendance and the providing of two programmes in the morning, one primarily of medical interest, the other devoted to the bacteriology of milk, food and water, brought a new sense of the scope of the Section's activities. The Association is indebted to the Surgeon General of the United States Public Health Service for granting permission to Surgeon J. P. Leake to address the Section on the results of the investigations which he has made of the outbreak of epidemic encephalitis in St. Louis. The attendance of a number of members of other Sections of the Association to hear Dr. Leake evidenced the keen interest and appreciation of his visit. At the luncheon session at which Dr. D. T. Fraser, Toronto, presided, reports of the various committees were presented and accepted. The appointment of a committee on publications was made, with the following personnel: Dr. A. J. Slack, London, *chairman*; Dr. James Craigie, Toronto, and Dr. Wm. D. Hay, Kingston. A resolution also was passed endorsing the appointment of a committee on standard methods. The following Section officers were elected for the year 1934: *chairman*, Dr. M. H. Brown, Toronto; *vice-chairman*, Dr. W. J. Deadman, Hamilton; *secretary*, Dr. J. H. Orr, Kingston; *Section council*, Dr. D. T. Fraser, Toronto, Dr. N. MacL. Harris, Ottawa, and Dr. A. L. McNabb, Toronto.

The introduction of the mid-year meeting has met such an enthusiastic support from the members of the Association that announcement of the third meeting will be made early in the fall. A meeting of the Section is also being planned for the national meeting of the Association in Montreal.

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### Ontario Conference, Canadian Public Health Association, Ontario Health Officers' Association, Toronto, Week of May 28, 1934

FROM time to time during the past five years the Association has had the privilege of assisting in the programme of several of the provincially organized health associa-

tions by arranging for special speakers. It is the hope of the Executive that the Association may participate to an increasing extent in the provincial health association meetings, thus bringing the whole association into a more intimate relationship. This year the Association will join with the Ontario Health Officers' Association in an Ontario Conference. It is particularly gratifying that arrangements have been made to meet jointly with the Ontario Medical Association during the week of May 28th. The meetings will commence on Monday and all three associations will participate in the Wednesday sessions devoted to cancer.

### British Columbia

THE Senate of the University of Toronto has announced the awarding of the Diploma in Public Health to Dr. S. S. Murray of Vancouver, following a year of post graduate study in public health.

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The Tuberculosis Division of the Greater Vancouver Health League has commenced the publication of a small monthly *Bulletin* for widespread distribution. More than 1,500 cases of tuberculosis are known to the Department and the reporting of cases has been increased fivefold. Powers to enforce quarantine of a case were recently obtained by the health officer. Every effort is being made to make possible the building of a 200-bed sanatorium for the Vancouver district.

### Alberta

DR. A. C. McGUGAN, Department of Public Health, Edmonton, was recently elected president, and Dr. W. H. Hill of Calgary, secretary, of the Alberta Health Officials' Association. Among the papers presented at the annual meeting were: "The Control of Communicable Diseases", Dr. W. H. Hill; "Medical Supervision of Schools", Dr. Geraldine Oakley; and "Provincial Preventive Service through Health Units", Drs. G. M. Little and W. G. Saunders.

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During the present session of the legislature the Honourable Mr. Hoadley, Minister of Health, will introduce a bill to amend both the Mental Defectives and the Mental Diseases Acts, and also a bill to amend the Registered Nurses Act. The Legislative Commission will present their final report on state health insurance to the legislature at this session. Dr. A. C. McGugan is serving as secretary of the State Health Insurance Commission.

### Manitoba

THE Executive of the Manitoba Medical Association have changed the format of the *Bulletin*, using a larger size page, and commencing with the January-February issue the publication will be known as the Manitoba Medical Association Review. In addition to reports of the activities of the Association and of the Department of Health and Public Welfare, the Review will continue the collection of data relating to Western Canadian medical history, together with original articles and abstracts.

### Ontario

THE names of Dr. James Craigie, Ch.B., Ph.D., D.P.H., and Dr. Charles Dolman, B.S., M.R.C.P., D.P.H., were associated in the awarding of the Connaught Laboratories' Prize for published scientific work in that institution. Dr. Craigie's researches relate to vaccine virus and Dr. Dolman's to immunological studies of the staphylococcus. The award of this prize is made every two years and it was first awarded in 1931, the recipient being Dr. Frieda Fraser.

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Signal recognition of their outstanding contribution to public health in Canada was contained in the awarding of the C.B.E. to Dr. Helen

MacMurchy, formerly chief of the Division of Child Hygiene, Department of Pensions and National Health, and Miss Elizabeth Smellie, chief of the Victorian Order of Nurses, as announced in the New Year's Honours.

Dr. H. A. Ansley has been awarded the Diploma in Public Health following a post graduate course at the University of Toronto. Dr. Ansley spent several years in South America before commencing the course.

### Quebec

ANNOUNCEMENT is made by the Bruchesi Institute that St. Paul's Hospital, formerly used for the treatment of communicable diseases, will serve as a special treatment hospital for children suffering from tuberculosis. A new hospital is being erected on Sherbrooke Street East by the St. Luke Hospital authorities to receive the patients formerly cared for in St. Paul's Hospital.

### New Brunswick

THE announcement of the resignation, owing to ill health, of Dr. Mabel Hanington, medical inspector of public schools for the city and county of Saint John, has been received with widespread regret. Dr. Hanington was appointed fifteen years ago when school health work was first undertaken and has had an active part in the development of the whole programme in Saint John.

Dr. Howard B. Bustin, of Fairville, N.B., has been appointed to succeed Dr. Hanington. Dr. Bustin is a graduate of McGill University and has been in practice in New Brunswick for eight years.

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### Lieutenant-Colonel Arthur B. Chandler, B.A., M.D., C.M.

WITH tragic suddenness, death came to Dr. Arthur B. Chandler while attending the annual meeting of the Child Welfare Association of Montreal on February 13th. Dr. Chandler suffered a heart attack two years ago and had not been in good health, although continuing his active duties as head of the Children's Department of the Montreal General Hospital and medical director of the Child Welfare Association.

Graduating from McGill University in 1905 in Arts and Medicine, he practised at Rossland, B.C., but following service in the Canadian Army Medical Corps overseas, he commenced his practice in Montreal. Dr. Chandler was the leading figure in preventive health work among the children of Montreal. Through the Child Welfare Association, with its health centres, health supervision has been extended to nearly 10,000 infants and children. He was keenly interested in the work of the Mental Hygiene Institute and was instrumental some years ago in establishing the McGill Nursery School. He continued his interest in military affairs, being recently gazetted as lieutenant-colonel in charge of No. 4 Casualty Clearing Station.

Of quiet, retiring disposition, he was a favorite with his colleagues of the medical profession and respected and admired by all who knew him. To the under-privileged of Montreal he gave his best and was known to all social workers for his devoted service. Surviving are his widow, formerly Miss Helen Taylor of Perth, Ontario, and one daughter, Joan.

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# CURRENT HEALTH LITERATURE

*These brief abstracts are intended to direct attention to some articles in various journals which have been published during the preceding month. The Secretary of the Editorial Board is pleased to mail any of the journals referred to so that the abstracted article may be read in its entirety. No charge is made for this service. Prompt return (after three days) is requested in order that the journals may be available to other readers.*

### Erysipeloid Condition among Workers in a Bone Button Factory due to the Bacillus of Swine Erysipelas

Two hundred and ten cases of an erysipeloid condition occurred among individuals handling cattle or hog bones in a bone button factory during the first ten months of its operation. Repeated attacks of the disease were frequent. There was a close correlation with the handling of wet bone and occupations in which injury was frequent. The bacillus of swine erysipelas was isolated from one case and from samples of bone, bone waste and vat water.

G. Foard McGinnes, Am. J. Pub. Health, *24*: 32 (Jan.), 1934.

### Immunity and Susceptibility after Diphtheria

In a small series of children recovered from diphtheria it was found that the amount of antitoxin in their serum was inversely proportional to the severity of the attack. Some showed less than the accepted immunity level of antitoxin. The question of whether such individuals with low antitoxin titres are to be regarded true post-infection susceptibles is discussed. If as a result of a small antigenic stimulus they are able to produce rapidly an adequate supply of specific antitoxin they may be considered as potentially immune. Three individuals in the series reported and showing less than the immunity level of antitoxin were given an injection of toxoid. Two showed a response indicating that they were potentially immune; the other showed no response and was regarded as a true post-infection susceptible.

David L. Klein et al., Canad. M.A.J., *29*: 593 (Dec.), 1933.

### Investigations on the *Gravis*, *Mitis* and Intermediate Types of *C. Diphtheriae* and Their Clinical Significance

The conclusions of Anderson and his co-workers in 1931 that there were three forms of the diphtheria bacillus (*gravis*, *mitis* and "intermediate") having characteristic cultural and biochemical reactions and correlated with the severity of the illness have met with no general confirmation and others have failed to obtain similar clear-cut results. This communication deals with the investigation of 542 consecutive cases of diphtheria and carriers from the Manchester area along precisely the same lines as followed by the Leeds workers. The results confirm the findings in Leeds in the main essentials. Apart from 1.5 per cent of atypical strains the strains presented little difficulty in classification. The incidence of the types varied greatly in different areas. While the *gravis* type was a much more potent cause of severe and fatal infections than the *mitis*, in the Manchester area intermediates were found at least the equal of the *gravis* type in this respect. Many *gravis* and intermediate cases were resistant to serum even in very large doses; *mitis* infections were rarely fatal except in complicated cases and were readily controlled by serum therapy. Twelve cases of clinical diphtheria occurred in persons whose Shick reaction was known to be negative immediately prior to the onset of disease; eight of these were due to the *gravis* type and four to intermediate types. Judged by their ability to invade and persist in the animal body, *gravis* and intermediate strains appeared to possess greater virulence than *mitis* strains.

D. T. Robinson and F. N. Marshall, J. Bact., *38*: 73 (Jan.), 1934.

### The Toxicology of Chromium

The toxicity of chronium is to a very large extent dependent on whether the metal is in the form of a chromic salt or a derivative of chromic acid. Chromic salts are apparently very inert and relatively gross amounts of chromic carbonate dust may be inhaled or large quantities of chromic salts ingested without causing any illness or tissue damage. In view of the greatly increased industrial use of chronium, a sharp distinction should be made between the inert chronium salts and the definitely toxic chromic acid derivatives. An extensive bibliography is appended to this paper.

Keiji Akatsuka and Lawrence T. Fairhill, J. Indust. Hyg., *16*: 1 (Jan.), 1934.

### X-Ray Mass-Procedure Applicable for the Discovery of Early Tuberculosis in Industrial Groups

A new technique of rapid X-ray applicable to the examination of groups in industrial plants is described. Individuals may be X-rayed at the rate of 150 an hour at the relatively low cost of $0.75 per person. The results obtained in the examination of over 20,000 individuals show that this method of examination is especially effective in the discovery of minimal tuberculosis.

Margaret Witter Barnard, Am. J. Pub. Health, *24*: 8 (Jan.), 1934.